

The

Communicator

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Issues appear bi-monthly, on odd-numbered months, for area Amateur Radio operators and beyond, to enhance the exchange of information and to promote ham radio activity.

Contributions of articles and photos are welcome.

During non-publication months we encourage you to visit the Digital Communicator at ve7sar.blogspot.ca, which includes recent news, past issues of The Communicator, our history, photos, videos and other information.

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If you find The Communicator worthwhile, regular readers who are not SARC members are invited to contribute a [donation](#) towards our Field Day fund via [PayPal](#) or via eTransfer to payments@ve7sar.net

SARC maintains a website at www.ve7sar.net

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QSK?



...from the Editor's Shack

Do you have a photo or bit of Ham news to share? An Interesting link?

Something to sell or something you are looking for?

eMail it to [communicator at ve7sar.net](mailto:communicator@ve7sar.net) for inclusion in this publication.

It has been a busy time around SARC/SEPAR. Our weekly Saturday morning drop-in at our training station continues to be a magnet for all things amateur radio. Recent projects included Winlink interfaces, 24 Ghz and 6m beacons, a 3D printer rebuild, amateur radio exams and of course contests.

In this issue, you will also find an early update on the February BC QSO Party, the homegrown contest of the BC DX Club. Many thanks to Rebecca VA7BEC and others for making this annual contest possible.

The big story this issue is the forthcoming special event station around the 80th anniversary of Operations Manna and Chowhound. They were the multi-nation, Allied forces food drops to NW Netherlands

just before the end of World War Two. A combination of a harsh winter and German blockades of food and fuel threatened to starve tens of thousands of the Dutch population.

The history and commemorative amateur radio stations, representing the nations that had military personnel taking part, are described in this issue. SARC is fully committed with special event callsign VB7MAN, which will be 'on the air' in April and May.

We hope to work you as part of Operation MANNA @ 80.

Enjoy this issue.

73,

~ John VE7TI, Editor
communicator@ve7sar.net

On the Web ve7sar.net

Between Communicators, watch your e-mail for news, announcements of Amateur Radio events, monthly meetings and training opportunities.

Click the links below to follow our presence on the web and social media:

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ve7sar.blogspot.ca

Bluesky (No more 'X')
[#ve7sar.bsky.social](https://bsky.app/profile/ve7sar.bsky.social)

FaceBook
[SurreyAmateurRadio](https://www.facebook.com/SurreyAmateurRadio)

Our YouTube Channel
[SurreyARC](https://www.youtube.com/SurreyARC)



This Month's Cover...

A bit of snow and a lot of frost marked Winter Field Day here at VE7SAR. Three stations set up at [Derby Reach Regional Park](https://www.derbyreach.ca/) along the banks of the Fraser River, near Fort Langley, BC

You will find an article and photos in this edition.

"It is lamentable, that to be a good patriot one must become the enemy of the rest of mankind." - Voltaire

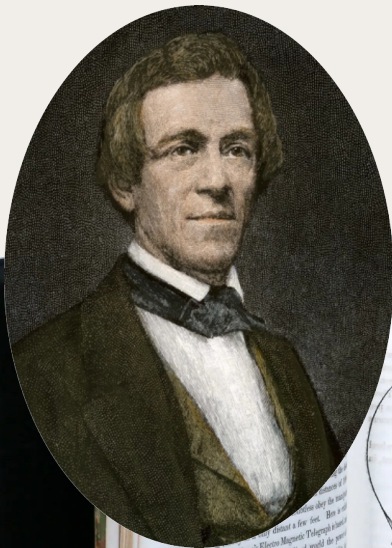


The Rest of the Story...

Alfred Lewis Vail

Is it Morse code or actually Vail cipher?

Alfred Vail

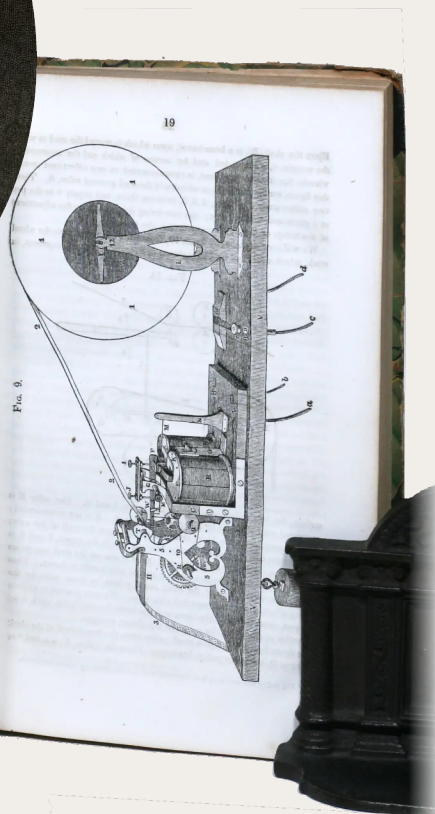


Alfred Lewis Vail, born on October 25, 1807, in Middletown, New Jersey, is a name in the history of telecommunications that often lurks in the shadow of more widely recognized figures such as Samuel Morse. However, Vail's contributions were undeniably crucial to the creation and popularization of Morse code, a revolutionary communication system that would define the transmission of messages across vast distances for over a century. He not only played an instrumental role in the development of Morse code, but he was also deeply involved in the broader landscape of cipher development, which was key to securing communications and maintaining privacy. Vail's work laid the foundation for numerous advancements in technology and communication, influencing industries and methods of ciphering that would eventually lead to modern cryptography.

Early Life and Education

Alfred Vail was born in Morristown, New Jersey, where his father was an entrepreneur and industrialist who built the Speedwell Ironworks into one of the most innovative iron works of its time. Their other son George Vail, Alfred's brother, was a noted politician.

Alfred worked at public schools before taking a job as a machinist at the iron works. He enrolled in New York University to study theology in 1832, where he was an active and successful student and a member of the Eucleian Society, graduating in 1836. He attended the prestigious New York University, where he studied engineering and mechanics, laying the groundwork for his later contributions to electrical engineering and telecommunication.





Vail's early exposure to engineering and technological innovations put him on a path toward involvement with one of the most groundbreaking communication inventions of the 19th century. This path would ultimately lead him to Samuel Morse, a professor of painting at the time, who would soon embark on his own journey to revolutionize communication across long distances.

The partnership between Vail and Morse would go on to shape the future of communication, and it was Vail's critical input that would significantly refine Morse's ideas.

The Birth of Morse Code

There is some controversy about when the Electrical Telegraph was invented. The British claim that it was in 1837 by William Fothergill Cook (1806-1879) and Charles Wheatstone (1802-1875) with parallel innovations being made by Samuel Morse (1791-1872) in the United States.

In the early 1830s, Samuel Morse had begun experimenting with the concept of telegraphy—a system for transmitting messages over long distances using electrical signals. Initially, Morse's telegraph system involved a method of encoding messages through a series of pulses, but it lacked a clear and effective system of notation. Morse's early efforts met with limited success, and the telegraph itself remained in its infancy.

In 1837, Morse hired Alfred Vail to help him develop the technology further. Vail, with his technical expertise and his family's resources, was able to contribute significantly to the telegraph's mechanical and operational design. More importantly, he became instrumental in refining the code that would be used to communicate messages through the telegraph. Vail and Morse together experimented with different systems of encoding. While Morse had originally conceived of a complex system based on numerical codes and symbols, Vail's influence led to the creation of a more efficient and simplified system based on dots and dashes. These signals could represent letters of the alphabet, enabling far easier transmission of messages.

Vail's brilliance lay in his ability to refine Morse's early code, resulting in a system that could send textual information over long distances in a highly efficient manner. The system became known as Morse Code, which used a combination of short and long signals—dots and dashes—to represent each letter of the alphabet. Vail also helped to simplify the mechanical apparatus that would send and receive these signals. His technical input allowed the system to be both accurate and reliable, laying the foundation for what would become a standard of communication around the world.

The First Successful Telegraph Communication

The real breakthrough in Morse code came in 1844. After years of experimentation, Vail and Morse successfully transmitted the first long-distance telegraph message from Washington, D.C., to Baltimore. The message was simple: "What hath God wrought?" This marked a critical moment in the history of communication, as it demonstrated the practical utility of telegraphy and Morse code in conveying messages instantly across great distances.

Alfred Vail's contribution to this moment was immense. His technical expertise and innovative improvements to the system allowed for the successful

transmission of this first message, proving that long-distance communication via electrical signals was possible. Vail's work on the telegraph also included improvements to the mechanical design of the equipment, making it more reliable and efficient for widespread use. Without his

The American Electro Magnetic Telegraph
With the Reports of Congress, and a
Description of All Telegraphs Known,
Employing Electricity or Galvanism

Alfred Vail



Published by the Library of Alexandria
Made in the United States of America



involvement, Morse's original telegraph system would have struggled to achieve the success it did.

Alfred Vail's Role in Cipher and Cryptography

While Alfred Vail is often remembered primarily for his work with Morse code, his interests extended to other areas of encryption and cipher technology, which were also critical during the time period. Ciphers, or methods of encoding information to keep it secret, were essential in the era before secure electronic communication. These systems allowed governments, businesses, and military organizations to transmit sensitive messages safely, keeping adversaries from intercepting critical information.

In the early 19th century, ciphers were used extensively for military communication and diplomatic correspondence. However, the methods for creating and deciphering these codes were often rudimentary, and there was a growing need for more sophisticated systems. Vail was not only involved in telegraphy, but he also had a keen interest in cryptographic methods. As a part of his work with Morse, he explored the possibility of using telegraphic systems for secure communication by developing a cipher system that could work in tandem with Morse code.

One example of his cipher work involves a system he proposed that would combine Morse's telegraphic code with a shifting key, similar to the later Vigenère cipher, which would allow for the secure transmission of messages. Although the exact cipher systems he designed are not fully documented, it is clear that Vail was aware of the potential of combining Morse code with encryption techniques to enhance security. This insight was part of a broader trend in the 19th century where cryptography and encryption were increasingly used to protect information transmitted over telegraph lines.

The Vail Family and the Expansion of Telegraphy

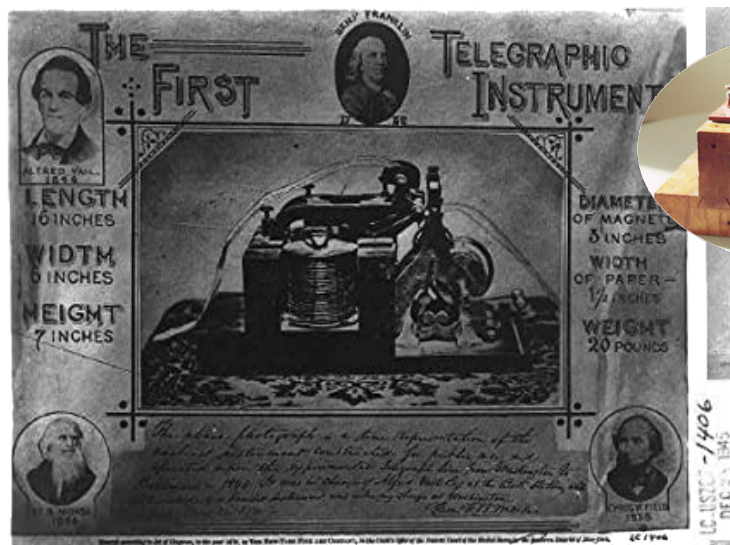
After the success of the initial telegraph lines, Alfred Vail's influence continued to grow. He expanded his role within the telegraphy industry by overseeing the construction of the first transcontinental telegraph line, which connected the eastern United States with the western frontier. This monumental achievement in communication had far-reaching effects on American society, economy, and military operations.

During the period following the invention of the telegraph, Vail continued to be involved in developing new technologies and improving the existing infrastructure. His contributions were especially important in the area of transmission quality. He worked on refining the telegraphic

system, making it more efficient and scalable, ensuring that it could operate over long distances with minimal loss of signal. The improved systems that Vail helped develop were crucial in the widespread adoption of telegraphs

by businesses, newspapers, and the government.

In 1848, Vail and Morse were granted a patent for their telegraph invention, which marked the formal recognition of their contributions. Vail's name was on the patent, an acknowledgment of his crucial involvement in the development of the telegraph and Morse



code. However, despite his vital role, Vail did not receive the financial rewards that came with the success of Morse code and telegraphy. Morse, as the more public figure, became the face of the invention, while Vail remained in the background, focused on the technical details of the system. Vail's contributions, however, were recognized by those in the know, and he is remembered as an essential figure in the history of communication.

Legacy and Recognition

Alfred Vail's contributions to the development of Morse code and his involvement in the early stages of cipher technology are often overshadowed by the fame of Samuel Morse. However, it is clear that without Vail's technical expertise, insight into encryption, and ability to refine Morse's original designs, the telegraph—and by extension, Morse code—would not have been as effective or successful as it was. Vail's work remains central to the development of telecommunication technologies that would define the modern world.

In his later years, Vail lived quietly in New Jersey, focusing on his personal interests and maintaining his connections within the scientific community. He passed away on January 18, 1859, at the age of 51. Despite his relatively low profile during his lifetime, Vail's legacy was cemented as one of the pioneers of modern communication.

Today, the legacy of Alfred Vail lives on in the form of Morse code, which continues to be a symbol of the power of innovation in the face of seemingly insurmountable challenges. The cryptographic systems he helped develop laid the foundation for later advancements in encryption, including the field of modern cryptography, which plays a critical role in securing digital communications today.

Alfred Vail's contributions to the development of Morse code and cipher technology were both profound and transformative. His technical expertise and inventive spirit helped shape the future of communication, laying the groundwork for modern telecommunications and cryptography. While Samuel Morse often receives the lion's share of credit for the creation of Morse code, it is important to recognize the indispensable role Vail played in its success. His work remains a testament to the importance of collaboration and innovation, and his legacy continues to echo throughout the history of communications and cryptography

And that is his story.



In New Jersey January 6, 1838, Samuel Morse and Alfred Vail display their telegraph equipment...



Bob King G3ASE

WWII RSS Monitor



The flickering dial of Bob King's crystal set cast long, dancing shadows across his bedroom wall. It was late 1940, and the air crackled with the unseen energy of war. Bob, a mere 16 years old, was no ordinary teenager. He was a "ham radio" enthusiast, his call sign G3ASE echoing across the airwaves before the war. Now, under the watchful eye of the Radio Security Service (RSS), his hobby had taken on a deadly serious purpose.

He meticulously transcribed the Morse code signals, each dot and dash a potential piece of intelligence. The airwaves were a cacophony of sounds - enemy transmissions, Allied communications, and the ever-present static. Bob, like hundreds of other "Secret Listeners," patiently sifted through this cacophony, his ears attuned to the slightest anomaly.

One evening, a peculiar signal emerged. It was unlike any he had encountered before, a strange, almost amateurish pattern of beeps and pauses. It was clearly German, but disguised, mimicking the transmissions of ordinary radio enthusiasts. Intrigued, Bob dedicated hours to deciphering it. He noticed a recurring three-letter call sign, followed by a series of cryptic five-letter groups.

Days turned into weeks. Bob, consumed by this enigma, meticulously recorded every detail, every nuance of the signal. He suspected these were not innocent hobbyists; they were German spies, transmitting vital intelligence under the guise of amateur radio. He reported his findings, his unease growing with each passing day.

The response came weeks later, a cryptic message from "Box 25, Barnet, Herts." It confirmed his suspicions: these were not ordinary radio enthusiasts; they were agents of the Abwehr, the German military intelligence service, transmitting vital intelligence under the guise of amateur radio. Bob, a young man who had once used his radio to connect with fellow enthusiasts, had stumbled upon a critical piece of the enemy's puzzle.

News of his discovery rippled through the RSS. The Abwehr, believing they were operating undetected, had fallen victim to the ingenuity of a teenage radio enthusiast. Bob, sworn to secrecy, continued his nightly vigil, his ears attuned to the whispers of the airwaves, a silent guardian against the enemy within.



His contribution, like that of countless other "Secret Listeners" like Nell Corry (G2YL) and Olive Myler (G3GH), remained largely unknown. They operated in the shadows, their work shrouded in secrecy. Yet, their efforts played a crucial role in the Allied war effort, providing vital intelligence that helped to turn the tide against the enemy.

The story of the "Secret Listeners" is a testament to the extraordinary contributions of ordinary citizens during wartime. Their dedication, their skill, and their unwavering commitment to their country helped to shape the course of history. Though their names may be forgotten, their legacy - a legacy of courage, ingenuity, and unwavering patriotism - lives on.

~

Read the article by Kate Moore at the website of [East Anglia Bylines](https://eastangliabylines.co.uk/lifestyle/history/secret-listeners-revealing-the-life-of-amateur-radio-heroes/): <https://eastangliabylines.co.uk/lifestyle/history/secret-listeners-revealing-the-life-of-amateur-radio-heroes/>

Bob 'Noz' King, G3ASE, became a Silent Key on Sunday the 5th of April, 2020.

In 1941 Bob was recruited as a Voluntary Interceptor at the age of 16, followed by four and half years in the Radio Security Service stationed at Box 25, Arkley View, Barnet. There he examined logs from intercept stations to determine which transmissions were German Abwehr and were thus wanted. These were identified, if possible, for the group and service or perhaps a new service set up by the Germans. The procedure was based on ham chat abbreviations, with rarely any indication that they might be German. But the ham chat was suspicious, eg QSA0 or QSA nil, QRX Next; 3 letter call signs and groups of 5 letter cipher!

As a school teacher, Bob ran the school club call sign G3MJJ at St Ivo school St Ives and they ran skeds with other schools.

In recent years he has not been active on the ham bands, but kept contact with other Voluntary Interceptors (VI), Bletchley Park and the National Radio Centre, where he is featured in the VI display. His family have asked to be given space and privacy at this difficult time.

~

A nice set of wooden CW paddles



Here's a couple pics of the wooden Morse paddle, Mk 1.

Adjustable magnetic tension, and adjustable contact gap. Supports iambic keying and has a standard 3.5mm jack for connection to a radio.

~ Stephen Churchill





World Amateur Radio Day

Celebrating the 101st Anniversary

by JOHN SCHOUTEN VE7TI

Every year on April 18, amateur radio enthusiasts around the globe come together to celebrate World Amateur Radio Day (WARD). This year marks the 101st anniversary of this special occasion, a testament to the enduring legacy and vital role of amateur radio in connecting people, fostering innovation, and providing critical communication during emergencies. As we reflect on over a century of amateur radio, it's clear that this hobby is more than just a pastime—it's a global community united by a passion for communication and service.

The Origins of World Amateur Radio Day

World Amateur Radio Day was first established in 1925 by the International Amateur Radio Union (IARU), the worldwide organization that represents the interests of amateur radio operators. April 18 was chosen as the date to commemorate the founding of the IARU in Paris in 1925. Since then, the day has been celebrated annually to honor the contributions of amateur radio operators and to promote the importance of amateur radio as a means of communication, experimentation, and public service.

Amateur radio has its roots in the early 20th century when radio technology was still in its infancy. Despite its humble beginnings, amateur radio quickly became a powerful tool for innovation and global connection. Over the past 101 years, amateur radio operators have played a crucial role in advancing communication technology, experimenting with new techniques, and providing essential communication during times of crisis.

The Theme for the 101st Anniversary

Each year, World Amateur Radio Day is celebrated with a specific theme that highlights a particular aspect of amateur radio. The theme for the 101st anniversary is "A Century of Connections: Advancing Communication and Innovation." This theme underscores the remarkable achievements of amateur radio operators over the past century and their ongoing contributions to the field of communication.

From the early days of Morse code to the modern era of digital communication and satellite technology, amateur radio has consistently been at the forefront of innovation.



Today, amateur radio operators continue to explore new frontiers, such as using software-defined radios (SDRs), experimenting with microwave frequencies, and even communicating with astronauts aboard the International Space Station (ISS).

The Role of Amateur Radio in Emergency Communication

One of the most significant contributions of amateur radio is its role in emergency communication. When natural disasters strike and traditional communication networks fail, amateur radio operators often step in to provide a lifeline for affected communities. Whether it's coordinating relief efforts during hurricanes, earthquakes, or wildfires, amateur radio operators have proven time and again that they are an indispensable resource in times of crisis.

The 101st anniversary of World Amateur Radio Day is an opportunity to recognize the selfless dedication of these operators, who volunteer their time and expertise to ensure that critical information reaches those who need it most. Their efforts have saved countless lives and demonstrated the enduring value of amateur radio in an increasingly digital world.

Celebrating the Global Amateur Radio Community

World Amateur Radio Day is not just a celebration of technology; it's also a celebration of the global community of amateur radio operators. With millions of licensed operators in nearly every country, amateur radio is a truly international hobby that transcends borders, languages, and cultures. On this day, operators from around the world come together to share their experiences, participate in special events, and showcase the diversity of the amateur radio community.

Many amateur radio clubs and organizations host events to mark the occasion, including public demonstrations, contests, and educational workshops. These events provide

an opportunity for the public to learn about amateur radio and experience firsthand the excitement of communicating with people across the globe using nothing more than a radio and an antenna.

Looking to the Future

As we celebrate the 101st anniversary of World Amateur Radio Day, it's important to look to the future and consider how amateur radio will continue to evolve in the years to come. With the rapid advancement of technology, amateur radio operators are finding new ways to integrate digital tools, explore space communication, and push the boundaries of what's possible.

At the same time, the core values of amateur radio—community, innovation, and service—remain as relevant as ever. In an age of instant messaging and social media, amateur radio offers a unique and meaningful way to connect with others, learn new skills, and make a positive impact on the world.

The 101st anniversary of World Amateur Radio Day is a milestone worth celebrating. It's a time to reflect on the rich history of amateur radio, honor the contributions of operators past and present, and look forward to a future filled with new possibilities. Whether you're a seasoned operator or someone who's just curious about the hobby, World Amateur Radio Day is the perfect opportunity to explore the world of amateur radio and join a global community that's been making waves for over a century.

So, on April 18, tune in, make a contact, and celebrate the spirit of amateur radio. Here's to another century of connections, innovation, and service!

~ 73 and happy World Amateur Radio Day.
Please celebrate it with something special!



Page 12

News You Can't Lose

BandOpticon

Where is each band open to from my local area? How active are they? What modes are being used? What DX are others in my area receiving and being spotted by? What squares are they reaching and spotting? What squares and callsigns am I reaching and spotting that other stations aren't? All on one screen??

BONUS - works great on phones and tablets too! click <https://g1ojs.github.io/BandOpticon/BandOpticon>.

This software uses data from PSKreporter to present a view of band activity on all active bands simultaneously. This is useful for seeing where the activity is and for spotting band openings. You can also simultaneously view detail for a single band, showing which callsigns are transmitting and which are receiving, and which DX squares or callsigns are being reached and spotted by them.

Active stations and spots are drawn from your specified group of Maidenhead squares, which provides fine control over what you want to specify as "Home". What you can see using this software includes:

- which active stations are transmitting or just receiving. In other words, are there stations actively working the bands, or have they just left their equipment running & gone to work - or are they even a WEBSDR station?
- whether the active stations are getting spotted by more DX calls than they are spotting themselves, or vice versa.

- Easily compare this with your own transmit and receive spots. How does this compare to your own station's performance?

If you aren't receiving or transmitting as well as you'd like, is this a problem with your setup or is it just how the band is currently?

- which DX callsigns are spotting, and being spotted by, the active callsigns in your specified squares. i.e. where is each band open to from your specified 'home region'.
- what squares / callsigns you're reaching/spotting, and which ONLY you are reaching/spotting
- what modes are being used on each band, and across all bands
- which bands are open and which have no activity

All on one screen. All for free. All from anywhere

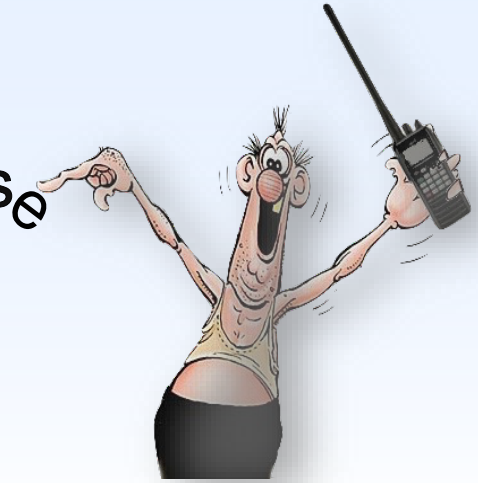
The software runs in Javascript on your machine and requires no downloads. Just click here to watch the statistics evolve.

~ <https://g1ojs.github.io/BandOpticon/BandOpticon>



Page13—News You Can Lose

The Lighter Side of Amateur Radio



Man sells radios to fund DXpedition, then realizes mistake

POINTERTOWN, Minn. — A local ham radio operator has hopes for a trip of a lifetime and a chance to set up his radio gear on a remote island in the Coral Sea. Problem is, he no longer has any radios.

Benny Ferguson is scratching his head, wondering what to do next. “I’ve been planning this trip for years, saving money when I could, and meticulously outlining how to engineer the perfect station on the island,” he says.

Getting enough money for the trip was difficult. “I guess it was around Christmas that I realized I needed a couple more thousand dollars. I looked around for things to sell to help finance the trip. That’s when I realized my radios and antennas could bring in a few bucks.”

His gear sold quickly on eBay, leaving his station empty. “The stuff was gone in less than a day and I had the money I needed. Then, well, I realized what I had done,” says Ferguson, holding back what appeared to be a both laugh and a sobbing cry.

Even though he doesn’t have any radios, he says he will still make the trip, keeping his hotel accommodations and plane tickets. “Maybe I can scrape up enough parts to make

one of those QRP radios in a Sucrets can. On second thought, why waste my time... no one will hear one of those.”

~ K5KVN, on the scene for HAM Hijinks



Radio Ramblings

Passive Radar Update; BladeRF SDR; Five Dollar Yagi

by KEVIN McQUIGGIN VE7ZD / KN7Q

Kevin Ahrens
www.kevinahrens.com

I hope that 2025 has started well for everyone. Spring will soon be upon us and things have been busy here around the house and in the shack.

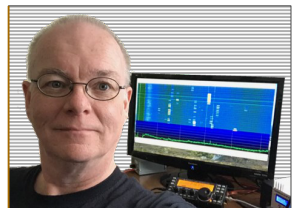
This issue I'd like to follow up on the passive radar project which I described in the January/February issue of The Communicator [1]. With the general improvement in the weather, I have finally been able to get some gear out into the field to test the new system.

It's not finished by any means, but I'll provide an update on the project, the bladeRF SDR that I am using to capture RF, and a 5-element Yagi that I put together for about \$5 that is being used to capture echoes from aircraft and other moving targets.

Short Review: Passive Radar

You'll recall from the last column that passive radar uses echoes from existing transmitters to detect aircraft and other distant objects. This differs from classical "monostatic" radar in that there is no transmission component built into the system.

In passive radar, RF from high power commercial transmitters (such as broadcast FM stations or digital TV transmitters) is used as the "illuminator" of potential targets. RF from the broadcast transmitter reflects off an aircraft in flight or other target of interest, and these



Kevin VE7ZD/KN7Q is active in EME, meteor scatter and much more. He lives on Vancouver Island.



echoes can be detected by suitable DSP software after the original broadcast signal is filtered out. See Figure 1 for how passive radar works.

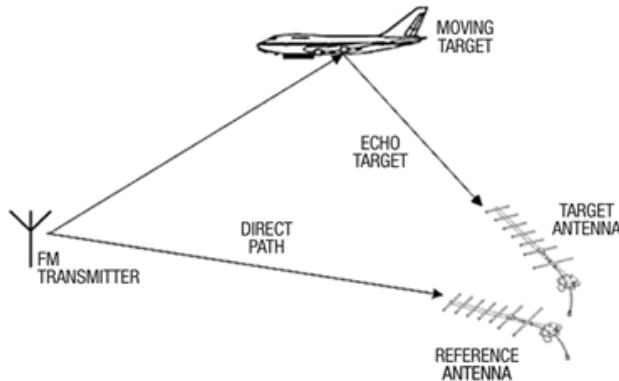


Figure 1 - Passive Radar Configuration

The passive radar receiver is on the bottom right of the figure. It receives both the direct path signal and the echo signal from the target. RF echoes from a target travel a longer distance than the direct path signals to the receiver's reference antenna. These echoes also introduce a time delay in their reception because it takes longer for the echo to reflect from the target and back to the passive radar receiver.

The longer travel time of the echo signal means that the direct signal can be filtered out of the receiver's data stream, leaving only the echo. This "clutter removal" process is performed mathematically. I found a book and a couple of articles that describe the process [2] and have been able to apply these methods using signals from a local FM broadcast station here in Courtenay.

I'll provide links to three audio files demonstrating real world clutter removal below. These are worth listening to.

Once the direct signal is subtracted from the observation signal, other analysis on the remaining RF can be performed to identify aircraft or other targets, and even compute their velocity and flight path.

A huge advantage of passive radar is that it does not require a dedicated transmitter. This eliminates the need for licensing and for expensive power supplies. Passive radar systems take advantage of transmitters such as those run

by TV and radio stations. This reduces the cost of passive radar because multi-kilowatt transmitters are power hungry and expensive to build and maintain.

Additionally, passive radar receivers are undetectable and cannot cause interference to targets or to other communication services. This stealth aspect of passive radar has made it an attractive technology for use in armed conflict or in clandestine operations, but that is beyond the scope of this article. There is some discussion of this topic in the book referenced at [2].

DSP is Key

The speed of light (and RF signal propagation) is about 300,000,000 metres per second [3]. At such a high velocity it may seem that detecting and measuring echoes from aircraft and other targets would be near impossible.

A radio signal bouncing off an aircraft 10 km distant and returning to a passive radar receiver will arrive about 67 microseconds later than a direct signal from the transmitter. What type of analysis could one ever accomplish in such a short period of time?

The incredible advances in computing technology and digital signal processing (DSP) over the past several decades have not only made these almost infinitesimal time differences measurable, but significant signal processing can be performed to analyze these signals in real time.

There are some hurdles, though. Chiefly, these echo signals are very, very weak. Aircraft have a small "radar cross section" (RCS), or apparent size, and the amount of RF energy that gets reflected from them is only on the order of a few microwatts [4].

The passive radar receiver listens to both the direct signal and the echoes from targets at the same time. It uses separate antennas: the "reference" antenna points at the broadcast transmitter, and the "observation" antenna points towards the area in which targets are located.

The direct signal is typically transmitted with many kilowatts of RF energy, so it almost always “bleeds over” into the field of the observation antenna. The direct signal being much stronger, it overwhelms any echoes from aircraft or other targets. How can these weak echo signals ever be detected?

Mathematics comes to the rescue. Digital signals can be manipulated mathematically, and this is key to de-cluttering (removing) the direct signal from the observation receiver’s passband so that the echoes can be detected and analyzed.

Using DSP, it is possible to “subtract” the direct signal from the observed “direct + echo” signal, leaving only the echo signal in the receiver’s passband [5]. Once the direct signal has been removed, software can then use the difference between the timing of the direct signal and the echo to determine the target’s distance. This process is called “clutter removal” [6].

It is also possible to determine a target’s velocity and flight path using geometry (thanks to Euclid [11]), additional signal processing and some clever mathematics that is well documented in [2]. These calculations are based on each target’s Doppler shift. I will have more to say this in a future column [6].

This is not to imply that the math is not understandable, so don’t think that you cannot figure it out! Amateur radio is about learning as well as operating, and if you possess an amateur certification then you have a good foundation on which to build further learning.

Once these echo characteristics are known, the target can be plotted on a map.

Coherent RX

One of the key parts of this process is ensuring that the direct signal and the observation signal (see Figure 1) are received simultaneously by separate RX channels on the passive radar receiver. This is called “coherent” reception.

The direct channel records the signal from the FM broadcast station, and the observation channel records the “direct + echo” signal as the observation antenna points towards potential targets. The signals on both ports are digitized and saved separately.

The passive radar receiver needs to support dual channel reception, and it needs to sample both RX channels in parallel. Sampling one channel and then the other will not work because the radar analysis depends on measuring microsecond-level timing differences to be able to identify and track targets. A coherent receiver has dual front-end circuitry that can sample both the direct and observations channels in parallel.

As discussed last issue, there are few coherent SDR receivers on the market. I did a market survey to compare features to cost and chose the bladeRF XA4 for this project. See Figure 2.



Figure 2 - bladeRF XA4 Coherent SDR

Reference and Observation Antennas:

The reference antenna gathers samples from the direct signal - the FM broadcast station. This signal is also called the “illuminator”. A simple omnidirectional antenna such as a vertical works well. The observation antenna points towards the target area and needs some directionality. A Yagi works well for this.

An advantage of using a Yagi as the observation antenna is that its radiation/reception pattern can be adjusted to minimize interference from the very strong direct signal. Pointing the Yagi so that the direct signal is in a null, or “on the back of the beam” will reduce the direct signal’s amplitude in the observation channel. This will make clutter removal easier.

The FM broadcast band spans 88 through 108 MHz. At my QTH in Courtenay there are a few FM stations with transmitters high up on the local peak named Mt. Washington. A high elevation illuminator is desirable because its signal will propagate further and illuminate targets up to 100+ km from the passive radar receiver. I chose two stations as suitable illuminators:

- “The Eagle”, CKLR-FM: 97.3 MHz, a classic hits station; 11.6 kW output power; and
- “The GOAT”, CFCP-FM: 98.9 MHz, an “active rock” station; 5 kW.

The helpful website <https://radio-locator.com/cgi-bin/page?p=provs> lists locations, callsigns, power levels and other technical details for Canadian commercial radio stations. It interfaces with Google Maps so that you can see where potential illuminators are, relative to your QTH.

A short aside: FM stations that focus on rock, hard rock, or (even better) heavy metal provide a better illuminator signal than talk radio or classical music stations. This is because louder and “noisier” music generates a broader FM envelope. Radar theory says that a broader envelope generates better echoes from targets. This interesting characteristic is discussed in detail in chapter 3 of “Introduction to Passive Radar” the book referenced in [2] below.

Both stations’ transmitters are on Mt. Washington at approximately 1588 metres (5210 feet) elevation [7]. CKLR on 97.3 MHz seemed the better choice as an illuminator due to its higher output power at 11.6 kilowatts.

The \$5 Yagi

Given my chosen illuminators, a Yagi resonant at about 98 MHz seemed to be the best choice. I don’t own an FM broadcast band antenna so the choice was to purchase, or to build one.

This is an experimental project with no guarantee of success, so purchase of an FM band Yagi seemed risky and a potential waste

of money. I decided to build a Yagi. The key requirement was low cost.

I used free online Yagi design software from K7MEM. It produced specs for a viable antenna in a few minutes. See https://k7mem.com/Ant_Yagi_VHF_Quick.html. For fabrication, I adopted the good-old SARC antenna workshop idea of building the Yagi from a broken tape measure that was kicking around in the garage. I used tin snips to cut elements of the proper length from the old tape.

The K7MEM antenna design site was happy to accept frequencies outside of the ham bands and gave me a design for a 5-element Yagi after I plugged in the resonant frequency (98 MHz) and made a couple of other choices. It gave me a diagram for the antenna and the necessary measurements, as shown in Figure 3.

Antenna Dimensions		
US/Imperial		Metric
Cumulative Spacing	Element	Element Length
Zero	REFL	58-15/16"
24-1/16"	D.E.	58-7/16"
33-1/8"	D1	54-5/16"
54-13/16"	D2	53-15/16"
80-11/16"	D3	53-7/16"

Figure 3 – K7MEM 5-element 98 MHz Yagi Dimensions

I built the antenna using a spare piece of wooden 1x2 as the boom and segments of the broken tape measure as the elements. Construction was quick and dirty. I didn’t bother with a balun or a gamma match and decided to connect the coax to the antenna directly. This is not optimal, but I just wanted an antenna that I could run some tests with. I plan to “professionalize” the Yagi once (and if) I get the radar system working!

See Figures 4 and 5 for two views of the antenna and its measured SWR. The antenna’s resonant frequency is a bit high, but it will work for this stage of the project. On the rebuild I will make the elements slightly longer.



Top, Figure 4 – Yagi Construction Details

Below Figure 5 – Antenna Test Stand and SWR

Note the use of vertical polarization. FM broadcast antennas use vertical polarization, so my observation antenna will work better in this configuration than if deployed horizontally. Signal loss due to cross polarization can be 15 to 40 dB [12].

In additional tests I determined that the \$5 Yagi works well enough to show some directionality and gather good data for the radar project. It was time for testing!

System Overview

Since the last issue of The Communicator I have been working on the software for this project. It is not complete and I have much further work to do, but I had made progress on the various stages of the receiver and the analytical software.

Figure 6 shows the configuration of the system.

The coherent SDR (bladeRF) is on the left. It uses a vertical antenna for the reference (direct) signal, and the 5-element tape measure Yagi for the observation antenna. The observation antenna points at potential targets. See a photo of these antennas in Figure 7. The SDR runs at 1 million samples per second (sps) and listens on 97.3 MHz on both the reference and observation channels.

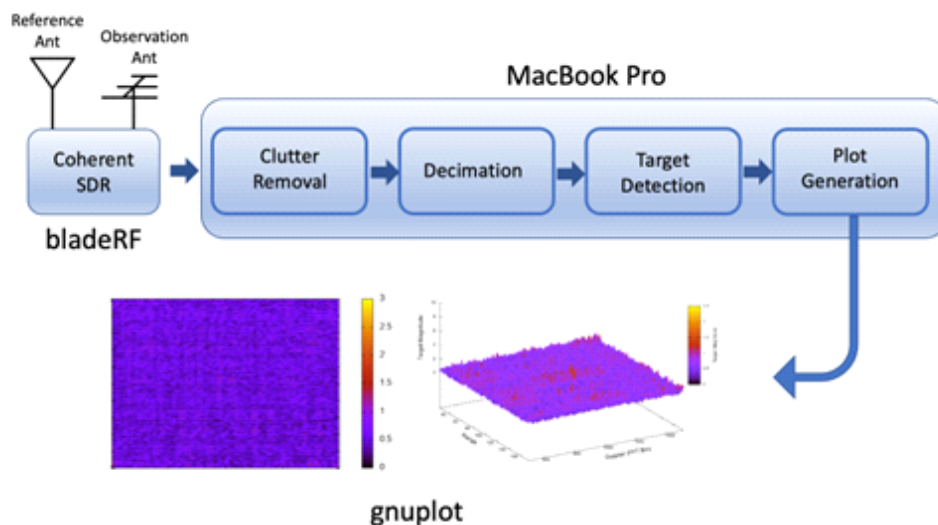


Figure 6 – Passive Radar System [10]



Figure 7 – Reference and Observation Antennas

The bladeRF digitizes the signals from both antennas, interleaves them, and passes them via superspeed USB 3.0 to the MacBook Pro. The Mac receives the data stream and writes it to disk.



Let's walk through the processing steps referenced in Figure 6. Each stage is a separate process. At each stage input data is processed and the output data feeds the next stage. All the code except that for plot generation is written in C.

A) Clutter Removal:

In this stage, the observation signal is processed by the clutter removal algorithm. The goal is to remove the direct signal and any other static echoes from the observation signal. Static echoes are those that have been reflected by stationary objects such as buildings or mountains.

This is a mathematically complex step. The direct signal from the reference antenna is subtracted from the "direct + echo" signal on the observation antenna. This leaves only echo signals in the observation channel.

This is great progress, but the clutter removal problem is still not solved. Why not?

The problem is that the observation channel still contains superfluous (or static) echoes from stationary objects like buildings and mountains, in addition to the echoes from aircraft and other moving objects.

Mountains in particular are very big, and they reflect a lot of RF energy. Static echoes can mask the weak target echoes from aircraft and other moving objects which we are specifically looking for in a radar system. We need to find a way to remove them.

In amateur radio, we call static echoes "multipath". Many hams have experienced multipath on HF, or on VHF/UHF USB. QSOs experiencing multipath have an "echoey" or mushy sound. Multipath wreaks havoc on digital modes, especially.

The key to removing static echoes uses the fact that all of the objects generating them are stationary, and they are all at fixed distances from the receiver.

The clutter removal code finds and removes static echoes by searching the observation channel's data for delayed copies of the reference signal. This is basically a "brute force" search. I delay the reference signal by up to 500 samples and scan the observation signal at each delay time to see if there is a correlation: to see whether there is an echo of the reference signal at that particular time delay. If there is, then I subtract that copy of the reference signal from the observation signal.

Delaying the reference signal by 500 samples corresponds to the distance of 150 km from the receiver. Echo delay can always be converted to distance, and vice versa. Removing static echoes in the observation signal at a delay of up to 500 samples will remove reflections from stationary objects up to 150 km away.

This aspect of radar processing is worth exploring:

- At a sample rate of 1,000,000 samples per second, one sample takes $1/1,000,000$ th of a second, or 1 microsecond. The speed of propagation is 300,000,000 metres per second. A radio signal travels $300,000,000 * 0.000001$, or 300 metres during the time it takes for one sample.
- A delay of 500 samples would allow light to travel $300 \text{ metres/sample} * 500 \text{ samples}$, or 150,000 metres: 150 km.

After checking for static echoes from 1 to 500 sample delays of the reference signal and subtracting any copies, the only signals left in the observation signal will be from moving targets like aircraft. Static echoes out to a range of 150 km will have been removed.

It was hard for me to believe at first that this process could work. I was really impressed by the results. Let's give some examples showing how this clutter removal procedure works on real world data. I demodulated the data I captured on 97.3 MHz last week and generated some WAV files that you can listen to. See Table 1.



Description	WAV File
Reference Signal	http://highgate.comm.sfu.ca/RR/ref.wav
Observation signal decluttered to 150 km	http://highgate.comm.sfu.ca/RR/150km.wav
Observation signal decluttered to 225 km	http://highgate.comm.sfu.ca/RR/225km.wav

Table 1 – Reference and Decluttered Observation Signals

Listen to the reference signal first. Then listen to the second file, where the reference signal and static echoes were removed out to a distance of 150 km.

Note in the second WAV file that the music from the reference channel is almost completely gone. The faint sound of the music in this file is not from “bleed over” of the reference signal into the channel - it is from a static echo of the reference signal from a mountain more than 150 km from the receiver.

When I first heard this I thought that my clutter removal code was not working.

After some thought I decided to increase the clutter removal limit from 150 km to 225 km, by increasing the maximum sample delay from 500 to 750 samples. The third WAV file is the result.

Note in the third WAV file that the faint music echo from the second file has been removed. Clutter removal works!

With the reference signal and static echoes removed, the clutter removal process is complete. The “cleaned” observation signal now serves as input to the next stage of processing.

B) Decimation:

At this stage the data stream is decimated to reduce its data rate from 1M samples per second (sps) to a more manageable 200K sps. This does not degrade the quality of the signals from either RX port because the typical audio bandwidth of a broadcast FM signal is about

100 KHz [8]. A lower sample rate reduces the load on the CPU performing the radar signal processing that follows.

C) Target Detection:

The next step is target detection. Input to the process is a file that contains the unaltered reference signal and the decluttered observation signal. The goal of this step is to detect echoes from moving objects such as aircraft in the observation channel data.

All the echoes from stationary objects in the observation channel have already been removed. All that remain are those echoes from moving objects - aircraft, in this case, as the observation antenna is pointed skyward.

If this is the case, why don’t we hear echoes from aircraft or other moving targets in the observation channel? The third WAV file (see the last section) sounded just like noise: there were no audible signals remaining. Why does the observation signal just sound like noise?

The first (but maybe not obvious) answer is that there could simply be no targets to hear! It could have been that when I was capturing data using the test setup (see the next section) that there were no aircraft flying in the area.

It is likely that there are some targets in the channel data, however, because the antenna was pointed towards Vancouver, and YVR airport is one of the busiest in Canada.

The second answer is that the targets were there, but we did not hear them. This is (as we shall see) the correct answer. But why not?

The reason we cannot hear echoes from targets in motion is because their velocity imparts a Doppler shift onto the reflected RF energy from the illuminator source. Targets moving towards the receiver will have their echoes increased in frequency, while targets moving away from the receiver will have their echoes lowered in frequency. This is explained in great detail in [2].

We all have real world experience with Doppler shift at audio frequencies: everyone can recall



how the sound of a passing emergency vehicle's siren shifts down in frequency after the vehicle has passed your position on the street. Doppler shift at RF works in exactly the same way.

The Doppler shift will be very slight, but it will "hide" the target in the observation signal so that the echo cannot be seen without further processing. This is where some more clever mathematics comes into play.

Doppler-shifted targets can be detected by comparing the observation channel data to Doppler-shifted versions of the reference signal: reference signals that have been artificially moved slightly higher and lower in frequency than the original reference signal. Conceptually, the process is similar to how we shifted the reference signal slightly in time by introducing sample delays in order to detect static targets.

The vehicle for generating Doppler shifted copies of a reference signal is called the Fast Fourier Transform, or FFT. FFTs involve advanced mathematics, but fortunately there are free software libraries that can compute FFTs for you. This brings the functionality of the FFT to everyone: you just need to understand the concept of what an FFT is and how to use it, rather than needing to understand the nitty-gritty of the process yourself.

I am using an open-source scientific library for this project called GSL: the GNU Scientific Library. It is free (see <https://www.gnu.org/software/gsl>) and is used all over the world by researchers and engineers in industry. GSL contains hundreds of functions, including a full set of FFT routines, and may be considered a "Swiss army knife" of sorts if you are working on advanced mathematical problems like passive radar.

I had not used the GSL before this project, but I am very impressed with it. It is complete, very well documented, has great community support, and runs on just about every operating system.

The passive radar article "FM Radio Based Bistatic Radar" from the IEEE in [2] was of great help in understanding how target detection works.

I wrote my target detection routine in C using the GSL to repeatedly shift the reference signal in frequency and then compare it to the signal in the observation channel using an FFT, looking for a match. A match indicated that there was a radar target at that frequency, and the value of the Doppler shift indicated whether the target was moving towards or away from the passive radar receiver.

Range plays a part in this process as well, as the correlation of a Doppler shifted target with the reference signal only occurs at a single range from the receiver. This allows the target to be quantified in range as well as velocity.

The target detection software analyzes one second's worth of data at a time and generates an output file that is used in the next step to plot detected targets on a 2D or 3D surface.

This step has been the most complicated part of the project so far. I think that I have the basic functionality working. I am seeing some targets, but not as many as I think that there should be. I need to review and refine what I am doing with the FFTs to ensure that the code is correct. This (and plot generation) is my current learning focus with the project!

D) Plot Generation and Results:

The final stage of the process uses the Doppler and range data coming out of target detection process to plot some real-world radar maps and charts. This is where the rubber hits the road.

Work is ongoing, but I will include some basic plots here to give readers an idea of what the passive radar system will eventually be able to produce.

I am using an open-source package called gnuplot for this plotting and mapping. See <https://gnuplot.org>. Gnuplot is a free graphing package with a huge toolbox of options that go far beyond the basic graphing capabilities in commercial tools such as Microsoft Excel.

Figure 8 shows the first positive result from my passive radar field testing. Targets are represented as distinct peaks in the background surface. The target (likely an aircraft) was about 100 km distant and moving away from the

passive radar receiver a low rate (indicated by a Doppler shift slightly to the right of the centre FFT bin numbered 1000).

I must point out that this is early data: details like proper velocity/Doppler figures and accurate ranging need to be improved. I am going to work on these later.

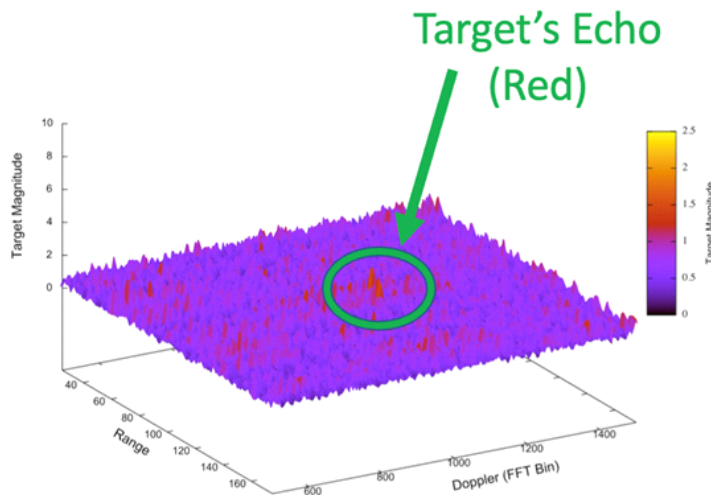


Figure 8 – First Passive Radar Target Detection (3D Version)

The second image, shown in Figure 9, is a 2D (map) view of another part of the field test data set. It shows another likely target (the red pixels near the centre of the map) about 75 km distant with a slightly negative Doppler shift (moving away from the receiver). The resolution is not great, and I am working to improve that, but the map is showing a weak target.

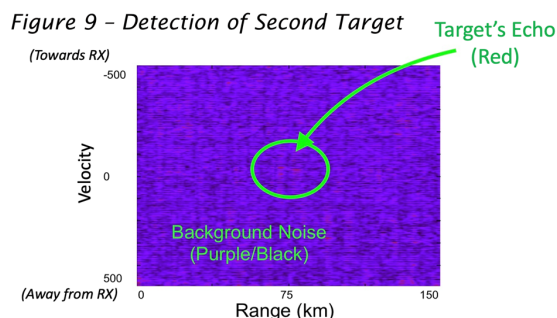


Figure 9 – Detection of Second Target

I will be working to improve target detection and plotting over the next several weeks.

Test Setup

This article wouldn't be complete without a couple of photos of my test setup. Figure 10 shows my vehicle with the reference and observation antenna deployed. My MacBook Pro laptop served as the power source for the bladeRF SDR and as the processing platform. I gathered data in the field for about an hour and then returned home to process it.



Figure 10 – Test Setup in Royston (1 km South of Courtenay)

Known Problems

In any project it is important to track issues as they are identified.

I need to do more work to verify that the target detection process is working. I also need to properly label the scales used on the charts and maps, and revise the titles and the palette of the gnuplot output to make it more readable, and to make target detections more distinct.

One serious technical issue that I just identified two days ago was an error with the AGC setting on the bladeRF SDR. The receivers on both channels default to AGC "on". In this mode, the SDR manages gain settings for the user and automatically adjusts the two receivers' gain "on the fly" as received signal strength changes.



This is very bad for complex systems like radar: AGC needs to be “off” so that signal strength can be used as a factor in mathematical calculations.

I’ve modified my RX code to set AGC “off” at the correct point during bladeRF initialization. This will result in more accurate data capture and (probably) generate big improvements in the rest of the signal analysis process. Better target identification and resolution, and better velocity figures would be fantastic!

Next Steps

We’ve just entered a period of good weather (no rain for the next few days), so I am hoping to return to the field and capture more data.

The next time the receiver is deployed I will use the excellent <https://adsbexchange.com> web site [9] to keep track of the aircraft targets that are in the view of the observation Yagi in real time. During the data capture I will adjust the azimuth of the Yagi to ensure capture of some targets in the data set.

This will ensure that the data file I capture from the system actually contains a number of real targets. It’ll be “back to the drawing board”, testing my code and hopefully moving towards more interesting results.

Conclusion

That’s it for this issue. I’ll report back on how the passive radar system develops in a later column.

Until then, enjoy the spring and your own amateur radio journey, and don’t be afraid to embark on an unusual radio project such as this. You learn the most when you take on a project in an area that you don’t know anything about! I knew absolutely nothing about radar three months ago, but I have learned a bunch of interesting stuff that might help me with amateur radio activities in the future.

SARC’s Elmers (always reachable at elmers@ve7sar.net) have broad experience in just about all aspects of the hobby and a bunch of other technical fields as well, and can give you advice on your project ideas and refer you to good resources for whatever radio-related interests you may have.

Feedback on Radio Ramblings is always welcome and may be directed to the Editor, or directly to me at mcquiggi@sfu.ca. Thanks for reading!

73,

~ Kevin VE7ZD / KN7Q

References:

- [1] The Communicator, January/February 2025. Page 15: “Reflections”. <https://www.calameo.com/books/0076654742e8d2e738b58>
- [2] A very informative eBook called “An Introduction to Passive Radar”, by Griffiths and Baker is available at <https://ieeexplore.ieee.org/document/9826859>. An article called “FM Radio Based Bistatic Radar” by P.E. Howland, D. Maksimiuk and G. Reitsma is available online at https://www.researchgate.net/publication/3357841_FM_radio_based_bistatic_radar. I found both resources very helpful.
- [3] See https://en.wikipedia.org/wiki/Speed_of_light. For those who seek accuracy, 299,792,458 metres per second is the exact figure!
- [4] The apparent size of an object that reflects an incoming radar signal is called the “radar cross section” or RCS. The RCS is normally measured in square meters. A typical airliner presents an RCS of about 10 square meters.
- [5] You may have used noise cancelling headphones: they operate on a similar principle. External noise is sampled by the headphones and then subtracted from the “external noise + music” signal inside the ear cups. This leaves only the music for our ears to hear.
- [6] I will talk further about clutter removal in a future column, but to give just a bit of detail, it is important to note that the clutter removal process only removes echoes from static objects: those objects which are stationary, i.e. not moving. Moving objects (either towards or away from the passive radar receiver) impart a Doppler shift on their



echoes, shifting the echo upwards in frequency (target moving towards the passive radar receiver), or downward (target moving away from the receiver). It is this frequency shift in the target's echo that is used to determine its velocity and path at a later stage of the detection process. This will be discussed in the next article.

[7] [https://en.wikipedia.org/wiki/Mount_Washington_\(British_Columbia\)](https://en.wikipedia.org/wiki/Mount_Washington_(British_Columbia))

[8] Recall that the Nyquist-Shannon theorem states that a signal needs to be processed at twice its bandwidth (information content) in order to be accurately represented digitally. See https://en.wikipedia.org/wiki/Nyquist%E2%80%93Shannon_sampling_theorem. A 100 KHz radio signal needs to be sampled at 200K samples per second. There's a bit of a twist in my example because most SDRs use complex sampling: they record TWO values for each sample, the familiar I and Q values we see in discussions of DSP. I could have decimated the bladeRF's two RX channels down to 100K sps rather than 200K sps because 100K complex samples contain 200K I and Q values.

[9] Thanks to Greg Franklin, VA7BC for telling me of the <https://adsbexchange.com> web site. This site tracks many more aircraft than sites like <https://flightaware.com>, which focus on commercial air traffic only.

[10] The two antenna symbols in this diagram came from <https://www.electrical-symbols.com/electric-electronic-symbols/antenna-aerial-symbols.htm>. The site has lots of useful electronic symbols that you can use in your diagrams and documentation.

[11] Euclid was a philosopher in ancient Greece. He is considered the father of geometry and the study of logic. See <https://en.wikipedia.org/wiki/Euclid>.

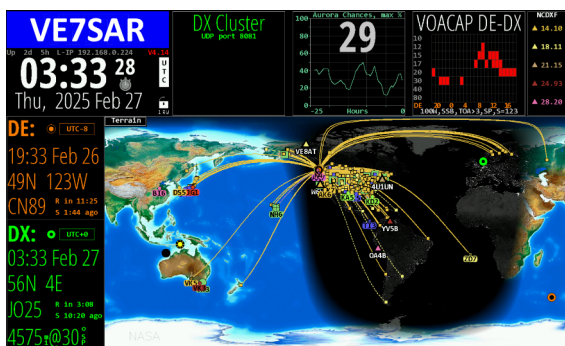
[12] See <https://ham.stackexchange.com/questions/12918>.

HamClock on Windows

I posted a video a while back showing that HamClock can be loaded on a Windows system. Since then a lot of people have commented that they have had problems getting it to load right. So, I have made a video going through the steps in real-time on how to load and configure Hamclock on a Windows computer, I tried this setup on both Windows 10 and 11, and it runs just fine on both. Hope you enjoy it!!

~ 73 KFØIDT

<https://youtu.be/0ImcpbnUAoI>



The Wobbulator

I recently came across a term that I had never encountered before, either in my electronics career or my amateur radio adventures. There is some colorful ham radio history surrounding the "wobbulator".

A wobbulator is an electronic device primarily used for the alignment of receiver or transmitter intermediate frequency strips. It is usually used in conjunction with an oscilloscope, to enable a visual representation of a receiver's passband to be seen, hence simplifying alignment; it was used to tune early consumer AM radios. The term "wobbulator" is a portmanteau of wobble and oscillator. A "wobbulator" (without capitalization) is a generic term for the swept-output RF oscillator described above, a frequency-modulated oscillator, also called a "sweep generator" by most professional electronics engineers and technicians. A wobbulator was used in some old microwave signal generators to create

what amounted to frequency modulation. It physically altered the size of the klystron cavity, therefore changing the frequency.

When capitalized, "Wobbulator" refers to the trade name of a specific brand of RF/IF alignment generator. The Wobbulator was made by a company known as "TIC" (Tel-Instrument Company) although some units branded "Allen B. Du Mont Laboratories" and "Stromberg-Carlson" are rumoured to exist. These were apparently made under some form of license and branded with the name of the licensee, much as Radio Corporation of America through subsidiary Hazeltine Corp., licensed its KCS-20A television chassis design (used in models 630TS, 8TS30, etc.) to other television manufacturers (Air King, Crosley, Fada, et al.) for production under their brand names. The Wobbulator generator, designated model 1200A, combined sweep and marker functions into a single self-



John Schouten VE7TI is active on HF, VHF and UHF from both his home station and at the SEPAR training station.

contained push-button controlled device which, when connected to an oscilloscope and television receiver under test, would display a representation of the receiver's RF/IF response curves with "markers" defining critical frequency reference points as a response curve on the oscilloscope screen. Such an amplitude-versus-frequency graph is also often referred to as a Bode (pronounced "bodee") graph or Bode plot.

In the 1960s a device described as a wobulator was made by instrument company Brüel & Kjær. It was an audio-frequency oscillator with an adjustable frequency modulation. The purpose of the modulation was in acoustic characterization of architectural spaces, where it prevented the build-up of resonances during measurement.

Another implementation of wobulators were designed and implemented in the mid-1980's at Singer-Link Flight Simulation. It was determined that due to the orientation of the CRT's checklists and other similarly formatted text at the simulator's control panels created a situation where checklists had to be scrolled through, line-by-line or page-by-page, to complete. Checklists that could fit on one screen made it more efficient to follow and/or troubleshoot. The implementation of x- and y-axis wobulators overcame the problems encountered.

I came across the following post on QRZ:

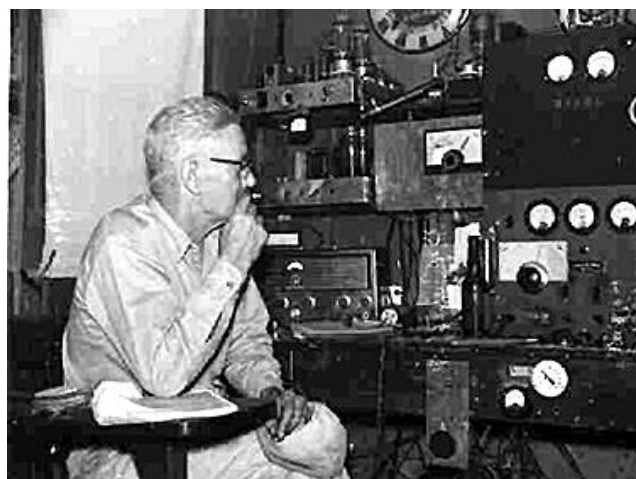
Conrad Bridges was an active on AM'er on the low end of 75 meters from the early 60s to the early 70s. He was quite a character and anyone who hung out on 75 and ran across Con would be sure to remember him. Once he was cited by the F.C.C. for using what he called his "wobulator" which was nothing more than a small motor running at a slow rpm and turning a capacitor attached to his VFO. It was quite effective at discouraging sidebanders although it was illegal.

In the mid '60s John W0PV, hung out with a young upper midwest roundtable ragchew gang on 3803 kHz LSB (the bottom of the 75m phone band then) and encountered Connie many

times. Being a young teen he had a distinctively high tone of voice, to which he would growl aspersions at me like, "The one thing I can't stand is a woman on sideband..."

Eventually his voice matured, and one of his absolute favorite AM'ers to QSO with today was a pal of Connie, Don K4KYV, who recounts the use of it below,

"Back in the 60's W4EBG and myself each equipped our stations with a "wobulator". Mine consisted of a small (approx 5 pf) butterfly capacitor coupled to a 3 or 4 rpm motor, and Conrad - W4EBG SK across the VFO coil. Con's used a small metal paddle connected to the shaft of about a 100 rpm motor, that swept by the VFO tube. Mine shifted the frequency over a range of about 1 kHz, enough to make it impossible for the slopbuckets to ride the carrier, but not enough to move the signal out of the passband of a typical AM receiver.



Conrad Bridges was an active on AM'er on the low end of 75 meters from the early 60s to the early 70s. He was quite a character and anyone who hung out on 75 and ran across Con would be sure to remember him. Once he was cited by the F.C.C. for using what he called his "wobulator" which was nothing more than a small motor running at a slow rpm and turning a capacitor attached to his VFO. It was quite effective at discouraging sidebanders although it was illegal.

We both got citations from the FCC for "simultaneous amplitude and frequency modulation". I responded that the "frequency modulation" was not simultaneous because the AM was voice modulation while the FM appeared as a slow drift about every 15 seconds, and that many AM signals on the air at the time drifted and wobbled more than mine (the Knight T-150, for example), many in step with the voice modulation as the modulator current caused the voltage to the VFO to sag.

Ben Waple of the FCC responded that yes, the intent of the rule was to prohibit voice modulated FM of an AM transmitter, usually resulting from too little isolation between the oscillator and the modulated stage (the SBE effect, such as from a modulated oscillator or a stock BC-375 transmitter), but that the FCC was interpreting that the rule was not "so limited", and that they interpreted the rules as not to allow one to deliberately adjust their transmitter to conform to the "worst example" of typical on-the-air signals.

But in today's Part 97 that rule has been deleted, along with the prohibition of modulation "beyond 100%". There used to be a specific section that made it illegal to run a

modulated oscillator. That one has also been deleted. Those changes were the result of Docket 20777, even though the proposed "sub-band by bandwidth" proposal similar to the recent ARRL petition was not adopted.

But I think the idea of shifting frequency at random intervals in random steps might be more effective against automatic notch filters.

This should be easy to set up with a DDS VFO."

<https://amwindow.org/pix/htm/w4ebg.htm>



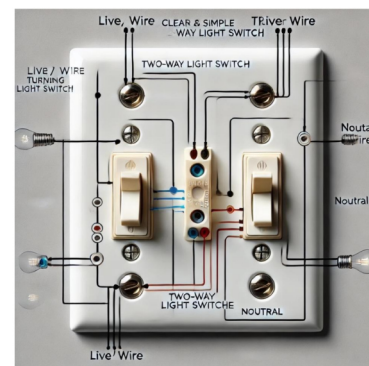
"Caught in 4K: When the satellite dish and the cone of shame sync up for ultimate surveillance!"

Recently ChatGPT 4 was asked to produce a circuit diagram for a two-way light switch.

The attached artistic looking rendering is what was produced.

This artwork illustrates that large language models like ChatGPT 4, at present, are incapable of circuit design.

~ Mark VA7MM



Rubber Coating Removal

Dealing with sticky situations

by PAUL STUBBS VK3TGX



Many devices, tools etc., often come with a rubberized anti-slip coating. Trouble is it does not last that long before turning into a sticky tacky mess.

I had read online that WD-40 was good at removing it, I was doubtful, but with a few cans on hand I thought I'd give it a go.

I had an Aldi Infrared thermometer and a small USB battery pack, so time to try the WD-40, well I was not impressed, it didn't seem to do anything in both cases.

Now don't get me wrong, there is probably several formulas for that rubber coating, and on some it may work. I gave it a good shot on both items, no joy.

So I went looking for other likely liquids, Mineral Turpentine did nothing and Windex was no better. Methylated Spirits did have some effect, however in the end good old Isopropyl Alcohol (IPA) seemed the best, it's just a pity it's not more widely available.

Jaycar, and I think Bunnings sell it in very small bottles, making it a tad expensive for jobs like this where you tend to go through a fair amount of it. I bought a 5 litre bottle for \$50 from Mektronics a while ago. (Internet) I'm always using it so the price didn't bother me, however they do have a 1 litre bottle for \$15.29

I see IPA all the time in YouTube video's from the US, where it seems to be readily available from hardware stores, pity that does not extend to Australia.

It does not dissolve the coating; only soften it so lots of rubbing and frequent changes to a fresh cloth are needed. With my thermometer the black rubber left an obvious black mark on the paper towel, so the time for a fresh piece was obvious, however the coating on the yellow section, as well as the battery left little evidence so I had to just blindly change the paper, lest I just smear it all over the place and not actually remove anything.

In the end both items now have a shiny, almost slippery surface, so not ideal, but WAY better than the sticky mess they were before.

~ Paul VK3TGX



Leaking Dry Cells

Dealing with sticky situations

by PAUL STUBBS VK3TGX



Whilst working on the 'Rubber Coating Removal' story, I remembered a wireless keyboard I have that also suffered from the sticky rubber problem. I had mostly removed the coating a while ago and thought I'd have another look, that was until I discovered the dreaded white crud coming from the battery compartment. Is it just me, or are dry cells getting worse? It used to be only a problem on rare occasions but now I seem to be seeing it all the time. I saw a YouTube story where they called the effect 'En-shit-ification', where company's just keep slowly degrading their products, because they can get away with it and they save a few cents.

Anyway I had heard that vinegar was a good thing to use to neutralize the leaking goop/acid. I had used some in the past by dropping it on with the end of a screwdriver, with no apparent effect, however this time I poured some into an



old milk bottle lid, I then inserted the crusty end of one of the 'AA' cells and was greeted by quite a reaction, way more than from just dabbing it on.

So with a fresh cap full and with the battery terminal springs that had easily separated from the case, I gave them a good dunk - more fizzing was the result, so obviously the dabbing on was far from ideal, better than nothing I suppose, but if you can get the terminals free from the plastic, definitely a better way to go.

If you can zoom into the springs in the cap, you'll see a few bubbles as the last of the acid is knocked out.

The vinegar is nothing special, just the stuff from the local supermarket you'd put on your fish & chips.

This bottle has been in the back of our pantry disused, almost forgotten for many years, so it's now been moved to my workshop cupboard as using really old ingredients on food is usually not a good idea. Even so, after all these years it still has plenty of bite - at least for battery acid.



On the right is a Megger, high voltage insulation tester (1000V) that suffered a similar fate a few months ago.

I will have to give it a second go with the vinegar, pity the battery terminals are in the middle of the PCB making dunking them way harder than the spring terminals from the keyboard.

Some say to always remove the batteries, which makes using things more painful, but then again not as painful as replacing ruined equipment.

~ Paul VK3TGX



This and Paul's previous article are reprinted courtesy of the author, and the January 2025 Gateway newsletter of the Gippsland Gate Radio & Electronics Club Inc.

The GGREC Web Site & Archive may be viewed at: www.ggrec.org.au and the Facebook page is at www.facebook.com/GippslandGate

An affordable and easy PCB vise solution

For electronics enthusiasts and professionals, having the right tools can make all the difference in the quality and efficiency of your work. One such essential tool is a PCB vise, which securely holds printed circuit boards (PCBs) during soldering, assembly, or inspection. However, high-quality PCB vises can often be expensive, making them inaccessible for hobbyists or those on a budget. Fortunately, the Brysonics "Electronics Projects and General Musings" website by Paul Bryson offers an easy and affordable DIY solution for building your own PCB vise.

The DIY PCB vise guide on Brysonics provides step-by-step instructions for creating a functional and sturdy vise using inexpensive materials. By leveraging common hardware store items like threaded rods, nuts, and wooden or plastic blocks, you can assemble a vise that rivals commercial options at a fraction of the cost. The design emphasizes simplicity, ensuring that even beginners can follow along without specialized tools or expertise.

One of the standout features of this DIY vise is its adaptability. The adjustable jaws can accommodate PCBs of various sizes, making it versatile for different projects. Additionally, the open-source nature of the design allows for customization, so you can tweak it to suit your specific needs.

Not only does this project save money, but it also fosters a deeper understanding of the tools you use. Building your own PCB vise is a rewarding experience that combines practicality with creativity. Whether you're a seasoned engineer or a weekend hobbyist, this affordable solution ensures you have a reliable tool to enhance your electronics projects. Check out the full guide on Brysonics to get started!

~



7300 9700 SIG



A Special Interest Group for the iCOM 7300, 7610, 9700 and compatible models

The spectrum scope and waterfall



John Schouten VE7TI

Has both an iCOM 7300 and 9700 and is fascinated by the 'hidden' features of these transceivers.

This time I'm going to walk you through some of the awesome features of these rigs, specifically focusing on how to tweak the spectrum scope and waterfall display. There are so many ways to customize this screen and the filtering to improve color, contrast and how to pinpoint those faint signals, making this a truly powerful transceiver. For certain, the filtering and signal-locating options on this radio are top-notch.

So, let's get started. I'll show you how to change the display to optimize the scope for spotting weak signals. Keep in mind, this isn't the only way to do it; it's just how I like to set things up. Some hams don't even use the audio scope, and that's perfectly fine. We'll take that out of the picture for now.

If you're looking at the main screen, you'll see the frequency, spectrum, and waterfall display in the bottom right corner. It's pretty small, eh? To make it bigger, simply tap the "expand" button. Boom! That makes the waterfall much larger. Now, you'll notice a fair bit of clutter up there. While it gives you a general idea of where the stations are, it's not ideal, especially on a noisy band.

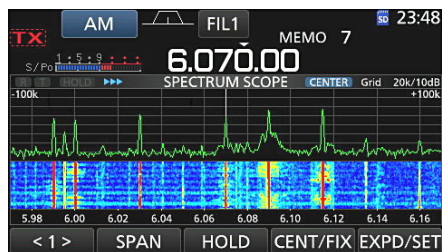
Let's hop over to another band and see what happens. Notice all that noise? It comes and goes, often blanking out the waterfall. Sometimes it's there, sometimes it's not. It can be a real pain when you're trying to find those weak signals. So, let's see how we can clean this up.

If you have never adjusted the trace, the first thing to note is the light blue or grey "peak hold" trace on the back of the spectrum scope. It shows the peak signal strength of a station. However, there's also a tiny trace here, and if you have a lot of noise, you might miss those weak signals.

Customizing the Scope Display

To start, we'll go into the "EXPD/SET" menu by holding that button. This takes you to four pages of attributes that you can tweak to tailor your radio's experience. First up is the "Max hold." I'm going to turn that off. You have the option to leave it on all the time, or set it to a 10-second hold and update. I don't want a hold right now, so I'll turn it off. Now, if a station transmits for a second, the hold would usually be there, but now it only shows the signals that are actively transmitting.

Next, with all this wide signal and noise, I'm going to head back into the menu and go to menu page 2. I'll change the "waveform type" to "fill plus line." This gives us a line for the signal, and it fills it in. Then, I'll change the "waveform color." I'll set the current color to black.



Moving on to page 3, I'm going to change the line color to green because it looks nice and crisp. And finally, I'll change the "Max hold color" to black. Now, watch what happens. See how it cleaned up all that mess and turned it into a nice solid green line with a black background? That makes it much easier to spot the peaks. You can see a couple of stations now.

To further clean things up, let's knock out some of the noise on the screen. You'll see "REF" in menu 2. I'm going to go to "reference" and turn the reference level down. Look at that! It knocked out all that hash and now it's only showing me the peaks of the signals. This makes it a lot easier to see on a noisy waterfall.



Fine-Tuning for Weak Signals

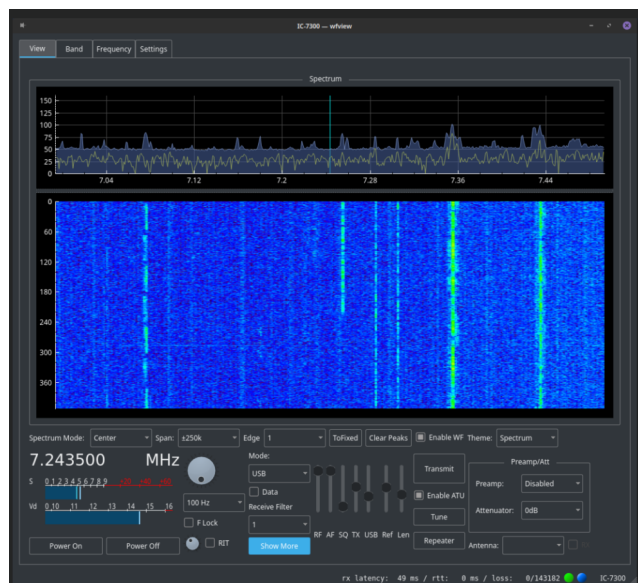
If we go back into "expand set" and look at the waterfall speed, we can change that to fast or slow. We can also make the waterfall size bigger.

WFView

Another suggestion for you. [wfview](#) is a free program that allows many modern iCOM ham radio transceivers (such as the IC-7300, IC-9700, IC-7610, IC-R8600, the IC-705, and many others) to be controlled via a computer. wfview shows a big spectrum display on whatever display is connected, including projectors, touch screens, and TVs. wfview allows for full radio control from a computer keyboard and basic control from a numeric keypad. wfview can run on hardware ranging from the \$35 Raspberry Pi to laptops to desktops. wfview runs on recent versions of Linux, MacOS, and Windows. wfview supports rig control over Ethernet/wifi as well as over the traditional USB serial CI/V bus. wfview also allows older radios to be accessed over the internet, for full control and low-latency audio streaming.

As of December 2024, the following radios have been tested and are known to work well (these are the "target" platform radios):

- IC-705
- IC-905
- IC-7300
- IC-7610
- IC-R8600
- IC-7850 / 7851
- IC-9700



wfvew has code to support the following additional radios on a best-effort level. Obviously, many of the more modern features (such as the waterfall display) are not available on these older radios:

IC-706 MKIIG, IC-718, IC-736, IC-737, IC-738, IC-756, IC-756 Pro, IC-756 Pro II, IC-756 Pro III, IC-7000, IC-7100, IC-7200, IC-7410, IC-7600, IC-7700, IC-7800, IC-910H, IC-9100.

<https://youtu.be/vsPV4VYNxnE?si=YmAuO-HK4gSbZH-M>

~ John VE7TI

The New iCOM IC-7760

The Tokyo Ham Fair had a new high end radio from iCOM. Their tagline is "High Power & Clean Transmit Signal for Great Strength in Contests and DX Hunting".

In one way, it is similar to my IC-2730A VHF/UHF radio. It has a separate control head and RF deck. In case of IC-2730A, the control head is meant for mounting in your car dashboard while the main part of the radio can be kept somewhere else in the car with a long connecting cable and power supply cable.

Similarly, the IC-7760, a commercially available LAN cable can be used to connect between the remote control head and the RF deck. This way you can have the RF deck closer to the antenna feed point and the control head on your table top. If you have a home Local Area Network, it is possible to operate from another room as well, without the need for an additional personal computer.

[YouTube video on the new iCOM IC-7760](#)



~



Remote control and operation and remote access by iPhone

by STEVE ZL1TZP

The first time I'd heard about remote control/operation was when Gavin (ZL1NWX) and Nigel (ZL2SEA) gave a talk at the club meeting in August 2018. At that time I thought it was interesting, but not something that I would use. Was I wrong about that! I have recently found remote control and operation of my rig to be easy and convenient, and have had a number of QSO's using my remote set up.

What got me thinking about remote control and operating again recently was a Break-in article (July/August 2024, page 18), As I read the article I started thinking that I may be able to remote into my rig at home from Japan. At the time, I was planning to visit Japan next year (2025), it may allow me to join the club net.

I downloaded the free software, both server and client, and installed them. I found that I was able to view the rig in the client and connect to it and control the rig. It worked! The thing that I wasn't keen on with this system is that others with the client software can also see my rig is online even though they couldn't control it (unless I gave them access).

As I have Icom rigs I decided to look into the iCOM remote control software package. There are many views regarding it online and one

thing that stood out was that a number of Hams had difficulty making it work, while there are others that had no difficulty. As the iCOM software is commercial there is also a cost.

I then had a quick look at [wfview](#), a free software package made for controlling Icom rigs. I had tried it a few years ago, but as my rig is an IC-7410, it wasn't fully supported, and I didn't have much success controlling the rig locally let alone remotely. As the name implies, (wfview) it seems to be aimed at newer Icom rigs with a waterfall (ie IC-7300 etc not an older rig like mine) I'm sure this software has matured a lot since I first tried it, and Hams are successfully using it.

Screenshot of wfview [above]

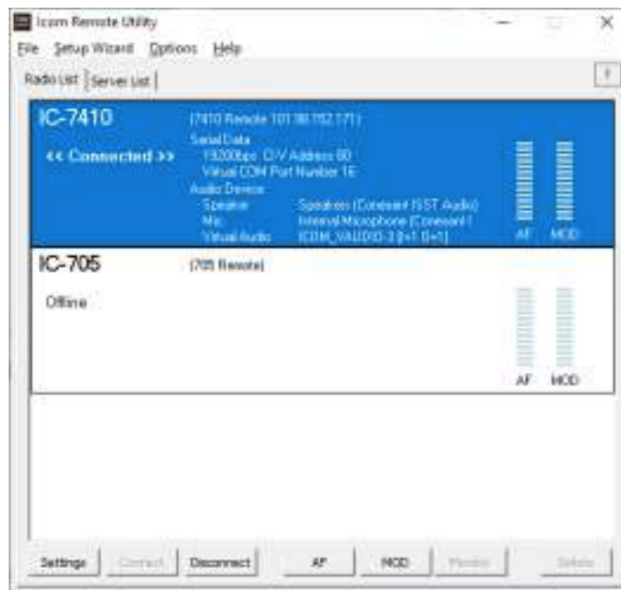
I ended up settling on the Icom package as it fully supports my IC-7410, and for that matter, all Icom multi-mode rigs with a USB or network connection, it is also updated to support new rigs as they are introduced.

The iCOM Solution

The software has two parts, the first part is 'iCOM Remote Utilities' the networking part, and 'RS-BA1 Remote Control' the rig control and interface part. If your rig does not have a network connection (either WiFi or wired), as

is the case with my IC-7410, [iCOM Remote Utilities](#) can be installed on a PC connected via USB to your rig, making your rig available on your home network.

This is what I had to do. Otherwise a rig with a network connection (i.e. IC-7610, IC-705 etc.), only needs to be set up to connect to your home network. On the PC (client) you'd like to use to control and operate your rig, install the software (both parts) and set it up as per the instructions. To remotely operate your rig (once everything is set up correctly); Run 'Icom Remote Utilities' first, this connects your client PC to the rig you'd like to operate remotely.



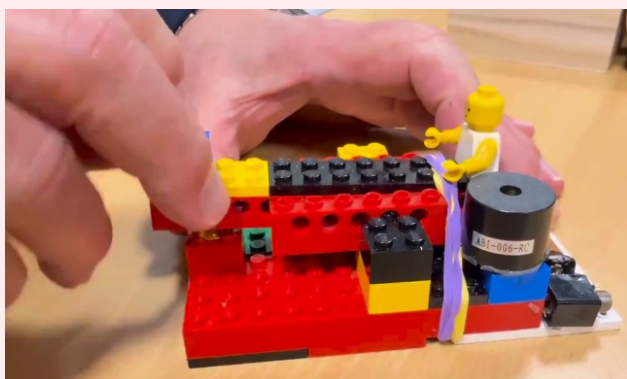
iCOM remote utility

Next start RS-BA1 (the rig control software) [screenshot left], now you will have all the controls available to you as if you are sitting in front of your rig.



iCOM RS-BA1

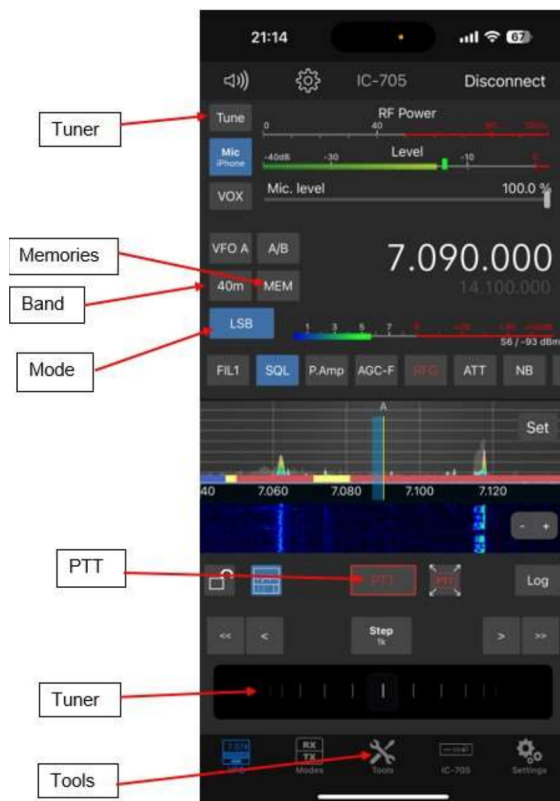
Continued next page...



A working Lego CW key

Remote Access by iPhone

If you own an iPhone and one of the following iCOM rigs: IC-705, IC-9700, IC-7610 or IC-R8600, then you can run the rig remotely from your iPhone. Your Radio needs to be connected to your Local network. For the IC-705 this will be a WiFi connection. For all other Radios, a LAN cable must be used. The App only requires iOS 16 or higher; there are no additional special memory or hardware requirements.



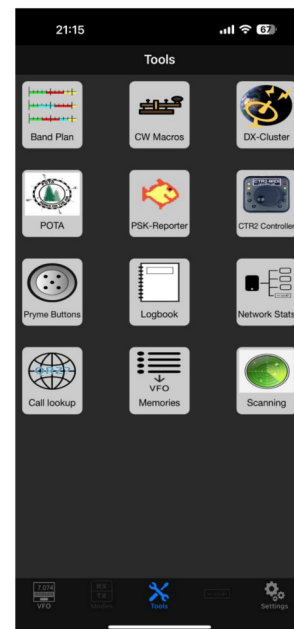
A connection to an IC-705

The app on the iPhone is SDR-Control Mobile, \$69.99 from the NZ Apple App Store, there is a Mac version for \$199.99 which will also work with the IC-7300.

The image shows a connection to an IC-705, you have control of band, mode, adjust the frequency, etc.

The waterfall shows signals. If you have a tuner attached, you can use the “Tune” button.

You can set the volume on the rig to zero when using the app so that it is not annoying someone near the rig. The memories stored on the rig are also accessible.



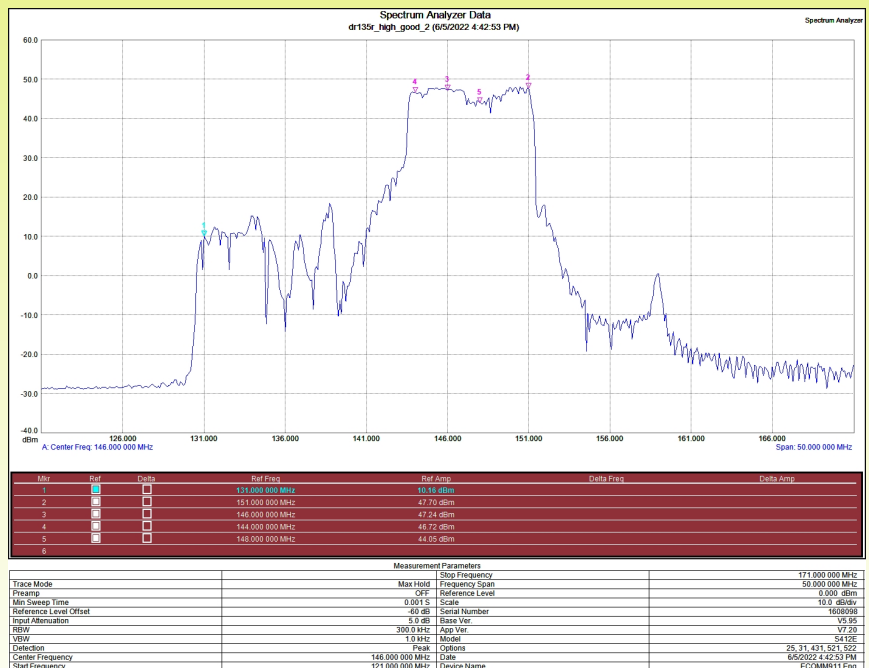
Here is a page of tools that are available to use

~ Steve Spring ZL1SPR

This article appeared in the newsletter of the [Franklin Amateur Radio Club Inc.](#) NZART Branch 10, Pukeohe, NZ, and was reprinted with permission of the author.

Do you own an Alinco DR/ 135/235/435T or TYT9000?

you want to read this...



Recently I was helping ISED track down the source of interference in the aircraft band. What was happening was that short clicks were opening the squelch on receivers used for emergency locator transmitters. I was also hearing from several local users of SSB on 2m that they were hearing repeated clicks on the band.

What I found were ALL of these Alinco radios were generating spurious transmissions EVERY time they key up. Only for a very short duration when they first key up, but it spreads well outside of the ham bands. The 2m spurs are from 128-160 MHz, 220 from 200-260 MHz, and 440 from 405-455 MHz. The issue is that the phase-locked loop (PLL) on these radios has not fully locked when the power amplifier is turned on. The result is the audible click (on SSB) and visual representation on a spectrum analyzer: <https://www.facebook.com/620310548/videos/pcb.2610194959184774/1222751165907697> and <https://www.facebook.com/620310548/videos/pcb.2610194959184774/662116383067174>. I have attached plots of measurements I personally made. Also attached some videos generated locally of the radio before and after

it's fixed. There is a YouTuber that made a very detailed video here: <https://www.youtube.com/watch?v=PRpkR9J2L5M>

This problem is compounded by the fact that these radios are often used in packet radio service, and therefore are keying and unkeying repeatedly. In the Vancouver area, there are several Winlink systems operating these radios that are causing repeated spikes up and down the two meter band.

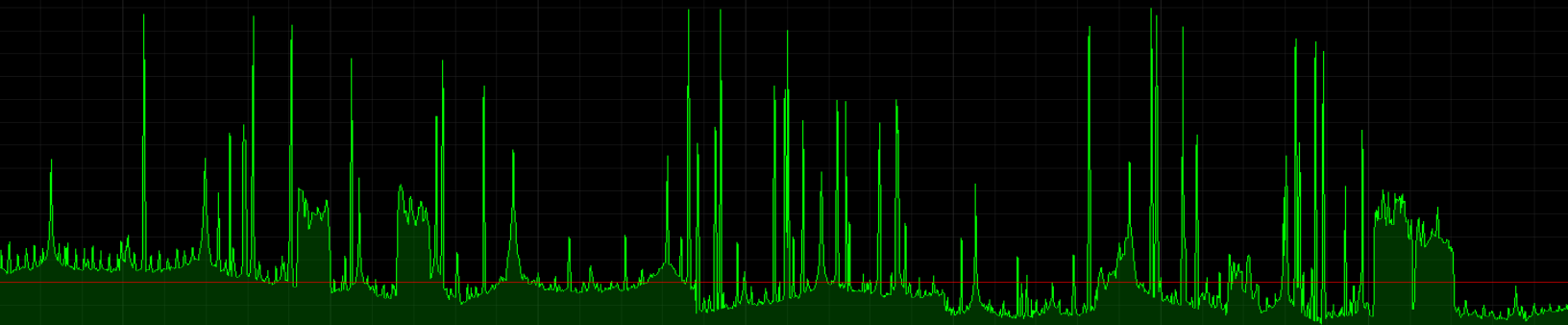
There is a fix. It involves changing a few components on the circuit board inside the radio to delay the keying of the power amplifier to allow the PLL time to lock.

I feel very strongly about interference, especially unintentional interference caused by poor circuit design. I am also not trying to bash Alinco in any way. I feel their radios are good value for the money, they just contain this dangerous flaw.

Friends don't let friends use (un-repaired) Alinco DR-X35 series radios!

~ David Cameron VE7LTD





The Background Noise on the HF Amateur Bands

courtesy of THE RADIO SOCIETY OF GREAT BRITAIN



The **Radio Society of Great Britain** ([RSGB](#)) is the United Kingdom's recognised national society for amateur radio operators. The society was founded in 1913 as the London Wireless Club, making it one of the oldest organisations of its kind in the world. Through its work, it represents the interests of the UK's 80,000 licensed radio amateurs

The intention of this article is to give a brief overview of the HF background radio noise as it concerns the radio amateur. Detailed studies into noise levels at various locations have been undertaken by organisations such as RSGB and VERON; anyone wanting more information should follow up these. Everyone is familiar with the term “noise”, but that very familiarity means it is difficult to tie down exactly what it means. It often means different things in different circumstances. In this leaflet “noise” means broadband radio interference either natural or man-made. In the UK it is often simply referred to as Radio Frequency Interference (RFI) and this convention is followed in this leaflet.

The HF Radio Noise Environment

On HF (3 - 30 MHz) there will always be noise picked up by the antenna, however well it is sited - this is called the ambient radio noise. This noise may be either man-made or natural, and unless the receiving antenna is extremely inefficient, will be much greater than the thermal noise generated in the front-end of the receiver. As frequencies rise into the VHF region, the natural noise decreases, until above about 100MHz the thermal noise in the receiver front-end becomes significant.

Natural Noise

This is the 'bottom line' of the noise in any particular location. It comes mainly from noise from atmospheric discharges which are always taking place somewhere in the world and are propagated by the ionosphere. There is also the noise coming from space usually called galactic or cosmic noise. Both these sources sound like white noise.

There may also be local atmospheric static but this is usually not a serious problem in the UK. In residential and urban locations the natural noise will be lower than the man-made noise and not directly observable.

The ambient noise floor

Traditionally the ambient noise floor has been defined as the noise which exists when specific local sources of noise (sometimes called 'incidental noise') have been eliminated. If the ambient noise is observed on a horizontal dipole antenna situated in a garden in a residential area, a 'floor' will be seen consisting of the natural noise, plus an aggregate of distant man-made sources. This is usually fairly constant in any particular location and sounds like white noise with an added gritty component. While this is still a useful concept, the practical application has been confused by the growing number of 24/7 broadband RFI sources in residential locations.

The term 'noise floor' is sometimes used to refer to the ambient noise in general, so care is needed in interpreting statements on noise. This is usually just fortuitous, though attempts have been made to justify broadband interference by claiming that it simply "raises the noise floor" and so does not count as interference. Needless to say, such suggestions get short shrift from organisations representing radio interests.

Man-made noise

Sources of man-made noise, in a typical residential location, tend to fall into two broad categories. Firstly, there are the traditional sources such as motors and other sparking devices. Sometimes these can cause quite high levels of interference but in most cases they are in use for only a limited time.

The other category is interference from digital electronic equipment, particularly the ubiquitous switch-mode power supply (SMPS). All such devices are 'unintentional emitters'. In most cases units that are compliant with the relevant EMC Standard will not be a problem unless they are very close to the receiving

antenna or for some reason are being misused. A lot of reported cases of noise from domestic devices are from rogue devices where EMC regulations have simply been ignored. Apart from the local domestic sources noise from power generation and transmission systems such as solar panels, wind farms and wireless charging installations have become a cause of concern. In this case the potential threat is enhanced by commercial and political pressures.

In recent years a new class of digital RF noise sources has become important. This is where RF energy is deliberately generated for the transmission of data down cables intended for other uses and where radio communication is not intended, such as telephone or electricity services. These are also classed as unintentional emitters. With such systems it is possible to manage the frequency spectrum of the RFI to avoid certain frequency bands (notching). The most prominent example of this notching is the in-house Powerline Adapters used to link computers and to distribute video signals. This is sometimes called 'managed interference'.

Assessing the Noise Objective

Apart from general interest, the main reason for assessing the noise at an amateur station is to determine whether the noise is more or less than what might be expected, or whether there is an abnormally high noise level which warrants investigation and action to reduce its impact.

The antenna

The essential requirement for any noise investigation is an antenna sensitive enough to enable the background noise to be observed at least 6dB above the preamplifier / receiver noise. Any amateur antenna will usually do this in its intended bands of operation, but it will be easier to interpret observations if a simple antenna is sited as far from the house as possible. The best antenna to use for this sort of work is a horizontal half-wave dipole at a height of 8m or more. An inverted Vee is a

simple alternative and has the benefit of being easy to improvise for a temporary setup.

At frequencies below 10MHz a half-wave dipole may not be practical. A doublet fed with open wire feeder or 300 ohm ribbon can be used. A dipole is sensitive enough, but has the disadvantage of being narrow band so that it can only cover one amateur band. A further advantage of the dipole is that a quick confidence check can be made by measuring the VSWR and making a few contacts.

If an active antenna is used the noise from the antenna amplifier should be at least 6dB below the expected ambient noise floor level.

Using an Available Receiver (Transceiver)

Is there is a local source of RFI which needs investigation or is the noise what might be expected for that location? To answer this, see if you can observe the background noise floor or whether it is permanently obscured by local broadband interference. In a nutshell, the noise floor is the best you are going to get, but if you are suffering local, broadband interference, then it may be worth taking steps to improve matters.

Start by listening across the band with the receiver set to AM or SSB, ignoring wanted signals and short periods of local noise. After this, leave the receiver tuned to a frequency which is as clear as possible of off-air signals and just listen to the activity. On some receivers clearer results may be obtained by switching off the AGC and using the RF and AF gain controls to set the required conditions.

At least some of the time the noise should be the typical background noise, “white” sounding but with small fluctuations, occasional clicks and a slight “graininess”. This will be the background noise floor. If you cannot observe this, even after long periods of listening then there may be a source of continuous broadband interference nearby. Usually local sources of noise such as switch mode PSUs (SMPSUs) have characteristic sounds easily distinguished from the noise floor.

If what appears to be the background noise floor is “smoother” than might be expected but the S meter reading is higher than expected then there may be a local source of “quasi white” noise interference. VDSL is the most likely cause. See Leaflet EMC 15 and the following additional resources.

- [EMC Leaflet 15 VDSL Interference to HF Radio.](#)
- [EMC-Leaflet-17-Identifying-VDSL-interference-using-Lelantos-v0.8.pdf](#)
- [Experiencing EMC interference? - Radio Society of Great Britain - Main Site](#)
- [Investigating-RFI-v4.4.pdf](#)
- [How to identify VDSL interference v1.0.docx](#)
- [vdsl ofcom final report_v2.docx](#)
- [Receiving interference FAQ - Radio Society of Great Britain - Main Site](#)

Using a Measuring Receiver

If a measuring receiver is available a much better assessment is possible and comparison can be made to published information such as ITU-R P.372. There are a large number of variables to take into account such as bandwidth, antenna type, detector type so that any comparison can only be approximate.

The receiver must have a sensitivity comparable to a communications receiver so that receiver noise is well below the noise being measured. Modern measuring receivers are very sophisticated and have a price tag to match, but for the present purpose an old measuring receiver from the pre-digital era will be perfectly adequate. These can sometimes be found at rallies or on the web at modest cost.

Set the receiver to the type of detector required. This could be average, rms, peak or quasi-peak. Set the bandwidth to 9kHz. (Some vintage measuring receivers have only quasi peak detectors and a fixed 9kHz bandwidth). Tune round the band as described above and then leave the receiver tuned to frequency where there are minimum off-air signals.

Adjust the attenuator and listen while watching the level indicator to see if the noise floor can be observed. This should be fairly constant over time fluctuating a dB or so around an average figure. In a crowded band it might be easier to use a narrower bandwidth and make the necessary correction to the results. If very narrow bandwidth is used bear in mind that the noise being measured is not truly white and conversion may be problematic.

Using an SDR Receiver

Software Defined Radio (SDR) receivers which work with an appropriate PC application are widely available. These give an excellent view of what is happening on the spectrum or waterfall but should be used with caution in noise investigations. In particular the resolution bandwidth of the wide band spectral display can be set very narrow and if the appropriate averaging is not set the true background level will be masked by swift variations in the signal readings. Most SDR's have a second spectrum scope which shows the digital down converted portion of the full spectrum, analogous to IF in a conventional receiver. They then allow many variations of demodulation bandwidth and mode to be selected which can be very helpful in identifying the signature of quasi-white noise on the demodulated spectrum display. Some SDRs have an amplitude display scaled in dBm or in dB μ V; but it is wise to check calibration against a known source. Comparison to expected field strength is only possible if the antenna factor of the antenna in use is known.

Where to look for information on radio noise

International studies of noise on HF go back to the 1950s when CCIR published Report 322 on atmospheric noise and produced Recommendation P.372. In 1993 CCIR became ITU-R and the information from 322 was incorporated into Recommendation ITU-R P.372. The current issue, ITU-R P.372-13, is available, free of charge, on the ITU web site.

In P.372, HF man-made noise levels are rms, median values, quoted as if measured on lossless monopole antennas - monopoles over a perfect ground plane. Man-made noise levels are divided into four categories. business, residential, rural and quiet rural. It is interesting to note that there is a surprisingly large difference between rural and quiet rural, which has led to speculation as to how the criteria were selected. These noise levels are only useful in giving a general idea of what might be expected. It is not a question of measurement accuracy but the fact that the conditions of measurement and the environment will differ widely.

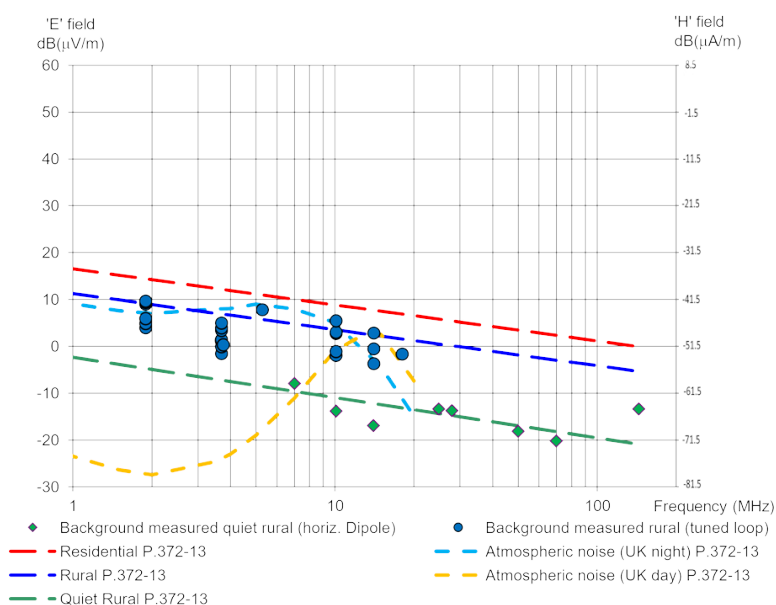


Figure 1 ITU-R P.372-13 expected receiver noise levels together with levels measured by RSGB EMCC 2014 to 2017.

The levels from ITU-R P.372-13 are shown in Figure 1. RSGB EMCC have also made a number of measurements in Rural and Quiet Rural locations away from man-made sources using tuned loops or horizontal dipole antennas. These points are also plotted in Figure 1.

The curves from ITU-R P.372-13 Fig 10 have been converted to E-field in dB(μ V/m) using Equation 7 in P.372-13.

It has been suggested that in the middle of the HF band an amateur station in a residential area might expect something between residential and rural based on the P.372 criteria. The RSGB has been running a noise measurement campaign since 2013. Interim results are available on the RSGB web site under “Propagation” and a final report can be found in January 2018 edition of RadCom page 86. Veron has been involved in noise measurements for several years and information can be found [Results of Measurement Campaign.pdf](#).

S Meters

S meters have the reputation of being notoriously inaccurate. Older receivers with simple S meters working directly off the agc did not indicate low level signals. Signals would be quite large before the needle stirred off zero. Modern receivers are better in this respect. Many have built-in pre-amplifiers which are automatically switched in or out for the different amateur bands but which can be manually selected if desired. S meters can be useful in noise investigations but it is important to remember that S meters are calibrated using a signal generator whereas the noise is broadband. This means that the indicated level will depend on the receiver bandwidth.

IARU Region 1 recommendation R1 defined the calibration for S meters as 50 μ V in 50ohms. This made S9 -73dBm. Each S point is 6dB so that S1 is -121dBm or 0.21 μ V.

Antennas and noise

Generally, a good transmitting antenna will also be a good receiving antenna, but on HF the requirements for receiving and transmitting antennas are not always the same. Since, at these frequencies, the ambient noise sets a limit to small-signal reception it may be better to mount a relatively poor antenna in a low noise location than to have an efficient antenna mounted where the man-made noise is high.

In normal amateur HF operating, signals arrive by ionospheric propagation and will be a mixture of vertical and horizontal polarisation.

With this in mind it is worth looking at two basic antennas from the point of view of optimising the ratio between signal and ambient noise.

The dipole. The horizontal half wave dipole has always been a popular antenna. Apart from its simplicity and low cost it has the advantage of receiving primarily horizontally polarised signals (except off the ends) so that it is insensitive to vertically polarised noise. In practice the inverted Vee half-wave dipole gives pretty much the same results.

The vertical antenna tuned to resonance on one or more amateur bands. These are popular because they are convenient and unobtrusive. Verticals have a reputation of picking up more noise than a horizontal dipole and this seems to be deserved. They are sensitive to vertically polarised noise and in particular they will respond to surface-wave noise.

The small tuned loop antenna for reception. Receiving tuned loops are often used where a small but sensitive antenna is needed for interference investigations. It is possible to make a small tuned loop feeding directly into a well balanced high impedance amplifier providing gain and also transforming the high impedance to 50 ohms. The sensitivity is remarkably good and it should be possible to “see” the noise floor in a residential location. The disadvantage is that such a loop has a high Q factor and consequently a narrow bandwidth. Professional portable tuned loops are sometimes used for radio interference investigations. These should not be confused with the broadband loops which are used for EMC measurements where relatively large signals are involved. These are very “deaf” in radio terms.

Caution is needed in interpreting noise levels measured on loops. The relationship between E and H noise fields will be different in different electromagnetic environments.

~ Reproduced with the kind permission of the RSGB



Ham Operator Fined for Emergency Interference

In a landmark case highlighting the importance of responsible radio communication, a ham radio operator has been ordered to pay fines for interfering with first responder frequencies. According to the [FCC](#), the operator intentionally transmitted on emergency communication channels, disrupting critical communications during a public safety event. This marks one of the first instances where a ham operator has faced significant financial penalties for such interference, underscoring the Federal Communications Commission's (FCC) commitment to protecting essential communication systems.

The case began when first responders reported unexplained disruptions on their frequencies, which were later traced to the operator. Investigations revealed deliberate misuse of equipment to

broadcast over public safety bands, a violation of FCC regulations. The operator was fined \$22,000, a decision that has sparked discussions within the amateur radio community about the ethical use of radio technology.

This ruling serves as a stark reminder of the responsibilities that come with operating amateur radio equipment. While ham radio is a valuable hobby and public service tool, it must not compromise the safety of others. The FCC's action reinforces the importance of adhering to regulations, ensuring that emergency communication systems remain uninterrupted and reliable. For the amateur radio community, this case is a call to prioritize ethical practices and respect for public safety.

Make a Simple Crystal Earpiece

At HACKADAY, Jenny List wrote about a ham who created a 3D printed shell to make a simple replacement for a crystal earpiece. In the early days of electronics, the crystal set radio was a popular project for beginners. This simple AM radio receiver required only a tuned circuit and a point contact diode. However, finding point contact diodes has become increasingly difficult. Fortunately, they can be replaced with a cat's whisker type detector. But what about the high impedance headphones needed to listen to the audio?

Traditionally, these circuits used piezoelectric crystal earpieces, which are now hard to find. [\[Tsbrownie\]](#) has come up with a clever solution to this problem. Inside these earpieces lies a piezoelectric buzzer element. By creating a 3D-printed shell to replace the original, it's possible to twist up a set of wires and solder them on. The result performs just as well as the original, and even a little louder.

This simple yet ingenious solution opens up new possibilities for anyone in need of a high impedance earpiece. While the days of crystal radios and rudimentary transistor hearing aids may have passed, this project ensures that the necessary components are still accessible.

And here is a link to [building a crystal radio](#) for your earpiece Find the original article at HACKADAY: <https://hackaday.com/2025/01/17/no-crystal-earpiece-no-problem/>





BCQP 2025 — Initial Thoughts

Notes from the Contest Coordinator's desk

By REBECCA KIMOTO VA7BEC

Rebecca Kimoto VA7BEC is the Secretary and contest coordinator for the British Columbia QSO Party, held on the first full weekend of February each year.

Visit ORCA at: <https://www.orcadxcc.org/index.html>

The BCQP 2025 took place Feb 1-2, 2025, and drew participation mainly from within North America, as QSO parties tend to do. As of the Feb 17 log deadline, 418 logs were received - a new record - comprising 49 BC, 40 rest of Canada, 322 U.S. and seven DX. BCQP always draws a lot of attention from the U.S., keeping CQing BC stations very busy.

Scores for BCQP 2025 will probably be announced in April, and the number-crunching analysis, based on the content of submitted logs, will be included in the after-party report that should be ready by May.

By the way, everyone who submitted a log will have received a confirmation email through the log uploader page. If you submitted a log — or thought you did — and don't see your log in the Received Logs list (webpage address: <https://bcqp.contesting.com/bcqplogsrcvd.php>), please contact me at va7bec [at] gmail [dot] com. I will still accept logs that come a bit late, as long as it's clear that the initial attempt to submit occurred before the log deadline.

CONDX was very different from last year. All the bands were open, at least to a certain degree, but a considerable number of participants have commented about high noise levels and weak signals. At the sponsor station, VA7ODX, I don't think there was any time on Saturday or Sunday when the noise wasn't a seemingly endless and ferocious roar. It was tough for the CW op and me, on PH, to pluck letters and numbers out of that whirling sandstorm. Some signals were well above the noise, but most were right at noise level. Completing a log entry was perhaps a little bit ears and a lotta bit ESP.

The low-band rally (80 and top band) on Saturday evening provided a good chance to have QSOs with BC stations in areas of the province where skip makes high-band QSOs more difficult. Stations on Vancouver Island appear to have had a nice increase in activity on both PH and CW during the rally, logging contacts with other stations in BC as well as in other provinces and into the U.S.

Coinciding events have the potential to create challenges and, I know, for some people, the situation devolves into

frustration - can't find a frequency to run on or get QRM'd by other stations calling CQ only a few clicks away, have to deal with QSO exchange overload (details that aren't needed for the CQer's event), encounter operators in certain events who reply to a CQ BCQP with the exchange for their own event instead of the BCQP exchange, or simply ignore the station. Yes, for sure, there are challenges. But coinciding events can also create opportunities - more stations on the air means there are more chances for QSOs and perhaps some lucrative multipliers that might otherwise be in short supply or not available at all were it not for other events putting operators at their radios.

Over the years, more same-weekend operators have come to recognize the inherent value in reciprocal support and good on-air etiquette. They know it's a win-win opportunity.

This is especially so for NA Sprint CW. The overlap with NA Sprint CW was particularly frustrating for BC stations in BCQP and many operators used to call it quits. But thanks to efforts by the NA Sprint CW organizer to promote "Sprint etiquette" over the last couple of years, the situation seems to be far less stress-inducing. I've heard from several CW operators that trades, or at least the exchange of required info, was relatively smooth and efficient, and the majority of Sprinters got the info they needed and moved on to allow BC stations to continue calling CQ BCQP. A few very adept CW operators took the everything bagel approach and gave out enough extra info that Sprinters inevitably seek - and BCQP participants can ignore - to complete the BCQP log entry.

There is another coinciding CW event - it will remain unnamed but CW operators will know what event I'm referring to - that I'm going to have to describe as lose-lose, only because the majority of participants in this exclusive, members-only event apparently don't like it when non-members call them. Qs with non-members don't count for points so a trade is pointless (LOL), uhh, meaningless. I'm not saying all members of this exclusive CW community aren't obliging. I'm just saying that the exclusivity of this particular CW event puts a damper on the fun factor for BCQP participants. (And it makes the bands that much more crowded without perceived benefit.)

The goal in any event, be that a contest or a special activation, should be to have fun. Fun, of course, can be defined many ways - by smile-inducing moments, like when you put a lovely multiplier into the log or by a high run rate or by a better score than last year or simply catching the attention of an on-air pal.

Despite the challenges, operators near and far persevered, and I think everyone can be and should be pleased with their results. Well done!

There were - always are and probably always will be - challenges. Some are station-specific. Some are more pervasive. Some can be mitigated. Some cannot. Depending on QTH, CONDX might not have been great, good or even mediocre. Local noise might have obliterated outgoing CQs and incoming responses. And in 2025, CONDX was extremely challenging. Maybe there were issues with individual station setup, constraints on operating time or a mess of conflicting activities both on-air and at home. But I would guess - and 3830 comments and scores so far seem to bear this out - anyone who was really in the hunt for BC stations achieved very commendable results and any BC operator who spent time in the chair calling "CQ BCQP" built commendable logs despite perceived challenges.

BCQP is a wonderful opportunity for newcomers to the hobby - and contesting in particular - to learn how to execute QSOs quickly and accurately, trade exchange info if necessary, become familiar with logging software and, of course, deal with less-than-ideal propagation, etc.

On behalf of Orca DX & Contest Club, Koji and I extend our sincere appreciation to everyone who participated in BCQP 2025 and/or helped others get on the air. Let's do it again in 2026. February 7-8. Hopefully, CONDX will be better.

73,

~ Rebecca VA7BEC, Contest Coordinator, BCQP
Koji VA7KO

from the

ATV Journal

An Impressive, Low Cost LNA

And not just for ATV!

by JIM ANDREWS KH6HTV



Jim Andrews, KH6HTV
publishes the free ATV
Journal via email. All
past issues are archived
at: [https://kh6htv.com/
newsletter/](https://kh6htv.com/newsletter/)

I noted in [Drew VK4ZXI's blog](#) another Chinese product which looked interesting. It was a very nicely packaged Low Noise Amplifier (LNA) with impressive specs. Checking it out on Amazon, I was amazed at the very low price I found of only US\$14 ! At that price, I had to buy one to evaluate it.

Specs: Amazon's advertised specs. were: Band-width 100kHz to 6 GHz, 20dB gain, +22dBm, 50 Ω in/out, +5Vdc (70mA)

OK, can you really believe them ? Well yes and no. They are typical Chinese specs. I did proceed to very carefully evaluate this LNA. While it didn't meet all their specs., it is definitely a winner and a **must buy** at this price.

The model number stamped on the case is TQP3M9037-LNA. It turns out to be the part number of the MMIC used. It is a TriQuint (now Qorvo) part. The detailed spec. sheet is available on-line.

Qorvo only claims 0.7 to 6 GHz operational bandwidth, 20dB gain and 0.4dB noise figure at 1.95 GHz, +22dBm output power, +3 to +5V supply at 70mA. The actual MMIC is packaged in a very tiny, 8 pin, 2 x 2 mm, DFN package. That package is much too small for me to ever consider using it in my own preamp designs with my old eyes and shaky hands for hand assembly ! Qorvo's spec. Sheet includes a table of S parameters from 50 MHz to 5 GHz. The table shows the gain S21 to be 28.7dB (50 MHz), 24.5dB (1GHz), 19dB (2.4GHz) and 11.3dB (5GHz). They also show noise figure ranging between 0.3dB to 0.5dB from 1.5 to 2.7 GHz.

The evaluation unit which I purchased from Amazon worked well for most ham bands, but did not completely live up to all of Amazon or Qorvo's specs. In particular, it was not usable above 3.5 GHz and it did



not put out the max. advertised power. But otherwise, it was a great LNA. And definitely well worth the \$14 price. So here tabulated are my measured results.

DC Power: This has the very nice feature of an included, internal Li-Ion battery for stand-alone operation. The +5V USB port is only for recharging the battery. Provision is made to also power the LNA remotely via a Bias Tee to apply DC voltage via coax on the rf output connector. When +5Vdc is applied to the USB port, the amp draws 280mA, but only while recharging the internal battery.

The spec. for the MMIC is it pulls 70mA.



S21 vs. Frequency: Measured from 0 to 1.5 GHz, 5 dB/div & 150 MHz/div. Yellow trace is at instant of power turn-on. Magenta trace is after 15 seconds. Cyan trace is steady state reached after 30 seconds.

S21 Gain: The gain is not flat across the specified frequency range, but it is similar to what is listed on the Quorvo spec. sheet. However, I did note an instability during the initial turn-on period. [See the above S21 plot]. The dip in the gain curve first started at about 850MHz and then slowly drifted down to

stabilize at around 600 MHz. The max. gain measured was 30 dB at 0.5 to 3 MHz. At 100 kHz, the gain had rolled off to 26 dB and fell rapidly at lower frequencies [see top table below].

Obviously, this unit tested never came close to working at 6 GHz. It had marginal gain of only 8 dB on the 9 cm (3.4 GHz). Totally useless, -2.5dB for the 5 cm (5.8 GHz) band. But very useful gain for LF, HF, VHF & UHF bands.

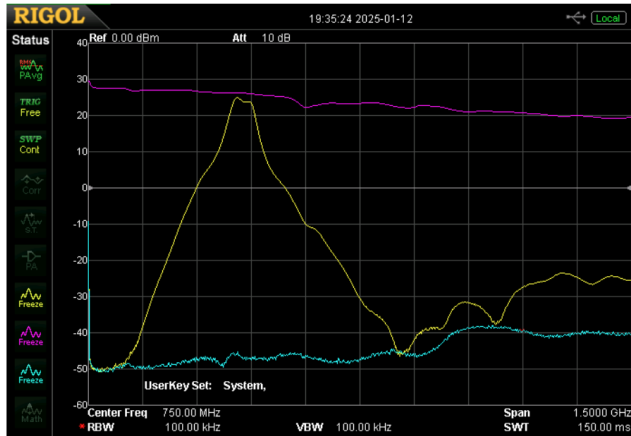
Max. RF Power: I also ran linearity tests to determine the -1dB gain compression point along with the the max. saturated rf output power on various bands. The unit tested did not quite meet Quorvo's specs of +22dBm. But it still put out considerable rf power. For the 70 cm and 23 cm bands, P(-1dB) was +19dBm and P(max) was +20dBm. For the 13 cm band, P(-1dB) was +17dBm while P(sat) was +18dBm.

Noise Figure: The noise figure (NF) was measured using an HP-8970A Noise Figure Meter. The noise head was a Noise Com model NC346B. The basic NF meter covers the frequency range from 10 MHz to 1.5 GHz. To make the measurement at 2.4 GHz, required using an external down converter. I assembled a temp down-converter using several discrete SMA components. The LO was a MAX-2870 frequency synthesizer with booster amp driving +14dBm into a Mini-Circuits 25MH mixer. On the RF input to the mixer I used a KH6HTV, UWBA-103 amplifier followed by an Amazon US\$10 pcb 2.4 GHz band-pass filter. The LO was set to 2.0 GHz with the IF at 400 MHz.

The measured noise figures were very impressive. They make this LNA a real contender for actual ham use in the ham shack [see NF table page bottom].

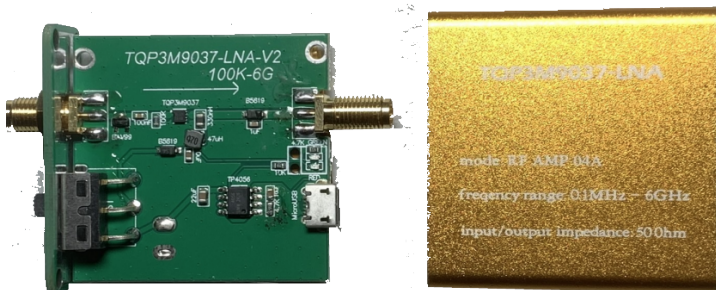
Band	80 m	20 m	6 m	2 m	70 cm	33 cm	23 cm	13 cm	9 cm	5 cm
Gain (dB)	29.7	27.7	27.2	27.2	26.1	22.1	20.4	15.5	8.0	-2.5

Band	20 m	10 m	6 m	2 m	70 cm	33 cm	23 cm	13 cm
NF (dB)	1.16	1.22	1.09	0.54	0.43	0.80	0.62	1.30



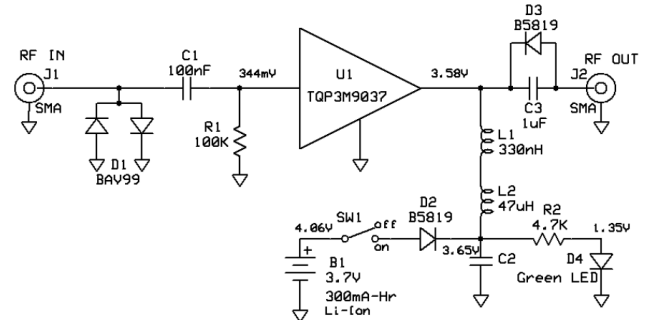
LNA with added 70 cm Band-Pass Filter: S21 vs. Frequency, sweep 0 to 1.5 GHz, 10dB & 150MHz/div.

Band-Pass Filtering: It is usually not a good practice to use an ultra-wideband amplifier as your pre-amp. Doing such exposes your receiver to every signal out there in the real world. Some of them are strong enough to overload your receiver and cause lots of havoc. Band-Pass filters are always recommended on our ham receivers. So, I also tested this US\$14 LNA with a 70 cm band-pass filter on its output. The filter I used was a KH6HTV Video, model 70-BPF (US\$60). The above plot of S21 shows the resulting dramatic improvement in signal rejection outside of the desired 70 cm band. The magenta trace is the S21 of the LNA alone, the cyan trace is the spectrum analyzer's noise floor for S21 measurement. The yellow trace is for the LNA + BPF. The resultant 70 cm gain and noise figure was 25.5dB and 0.5 dB. The -3 dB band-width was 67 MHz.



Actual Circuit: Naturally, I was curious as to what was inside the box. Here is what I found. There was a 3.7 V, 300mA-Hr, Li-Ion battery

mounted on the bottom side of the pc board. All of the components were clearly labeled on the pc board. Here is the schematic diagram I was able to draw from what I found. There was also a TP5056 battery charger IC on the board which I didn't include in the schematic.



Lousy Microwave Performance: So why is the gain so poor at the higher frequencies? We discussed this issue on the Boulder ATV net. The consensus is that first the presence of the input limiting diode, D1, is no doubt adding significant capacitive loading. Also the design of the dc power feeding network of L1 and L2 may be less than desirable at microwave frequencies. Checking the specs for D1, BAV99, diode shows that the capacitance of each diode is 1.5pF (@0V). Thus the input is being loaded with a significant (at microwave frequencies) 3 pF of capacitance. A quick R-C low pass filter calculation shows this adds -3.6dB (2.4 GHz), -5.5dB (3.4 GHz) and a whopping -9.3dB (5.8 GHz). Obviously a deal killer for the 5 cm band!

Potential Modification: OK, so let's try a little surgery on the actual amplifier. I removed D1 and retested the gain. Voila ! The gain at 5.8 GHz jumped up 7.5dB from -2.5 to +5dB. 5 dB is still not a useful amount of gain for a 5.8 LNA. At 3.4 GHz, the improvement was 3dB from 8 to 11dB. But in the process, we messed up the lower frequency performance. The gain dropped most everywhere about 1 dB, but what was worse was a degradation in the noise figure. At 70 cm it went from 0.4 to 0.7 dB and at 23 cm it went from 0.6 to 1 dB. So, except for perhaps using this LNA at 3.4 GHz, we really do not want to be removing D1. Best to leave this Amazon LNA unmodified and use it as is.

One Off - or Repeatable? So, at that point having messed up the first amplifier's low frequency performance -- I decided to order another LNA from Amazon to replace the modified one. How well did the second sample work? Well the good news is they perform identically. I got the same gain and shape of the S21 vs. frequency response curve testing S21 on the Rigol out to 1.5 GHz.

The same turn-on instability was noted. I then tested the noise figure. For the 2ed unit, the results were encouraging: 70cm = 25.4dB gain and 0.39dB NF. 23cm = 19.8dB gain and 0.57dB NF. Bottom line -- this is a good LNA and well worth the US\$14 price tag.

73

~ Jim Andrews, KH6HTV, Boulder, Colorado

Reprinted from the ATV Journal, issue 181
1/21/2024, All past issues are archived at: <https://kh6htv.com/newsletter/>

Editor's note: I found the same unit as reviewed on [AliExpress](#) for as low as C\$12.89 with free 14-day shipping, and for Canadian readers, I found the same model number on Amazon.ca as the [Pluuea MT1129 Low Noise Amplifier TOP3M9037](#) for C\$28.97, but it is not known if the specs exactly match this review.



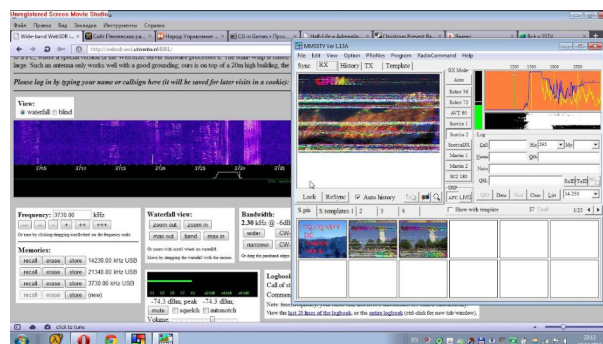
Pi Pico Makes SSTV Reception a Snap

There's a paradox in amateur radio: after all the time and effort spent getting a license and all the expense of getting some gear together, some new hams suddenly find that they don't have a lot to talk about when they get in front of the mic. While that can be awkward, it's not a deal-breaker by any means, especially when [this Pi Pico SSTV decoder](#) makes it cheap and easy to get into slow-scan television.

There's not much to [Jon Dawson]'s SSTV decoder. Audio from a single-sideband receiver goes through a biasing network and into the Pico's A/D input. The decoder can handle both Martin and Scottie SSTV protocols, with results displayed on a TFT LCD screen. The magic is in the software, of course, and [Jon] provides a good explanation of the algorithms he used, as well as some of the challenges he faced, such as reliably detecting which protocol is being used. He also implemented correction for "slant," which occurs when the transmitter sample rate drifts relative to the receiver. Fixing that requires measuring the time it took to transmit each line and adjusting the timing of the decoder to match. The results are dramatic, and it clears up one of the main sources of SSTV artifacts.

We think this is a great build, and simple enough that anyone can try it. The best part is that since it's receive-only, it doesn't require a license, although [Jon] says he's working on an encoder and transmitter too. We're looking forward to that, but in the meantime, you might just be able to use this to [capture some space memes](#).

~ Thanks to This Week in Amateur Radio ([TwiAR](#)) and [HACKADAY](#)





ISED Releases New Canadian Basic Amateur Radio Question Bank

by DAVE GOODWIN VE3KG, RAC Regulatory Affairs Officer

On January 27, 2025, Innovation, Science and Economic Development Canada (ISED) released the new Basic Qualification Question Bank for Amateur Radio.

This [new Question Bank](#) will be used for all Basic Amateur Radio Certificate examinations beginning July 15, 2025. Until then, the old Basic Question Bank will be used for all Basic examinations. Candidates, instructors and authors of Amateur Radio Study Guides may want to study the new Question Bank which is available for download from the ISED website at the link provided below.

Since early 2023, Radio Amateurs of Canada has had a committee of 20 instructors and Accredited Examiners (AEs) working to update and improve the quality of the 984 questions, 984 correct answers and 2,952 distractors (incorrect answers) in the Question Bank. This was the first major update to the Question Bank since 2013. RAC's Examinations Standards Committee (Comité des normes d'examen) (RAC-ESC-CNE) worked closely with ISED officers on the final versions of the exams which were agreed on by RAC and ISED in late 2024.

Radio Amateurs of Canada has prepared the following documents to help with the transition to the new Question Bank: a bilingual document which contains the old questions next to the new questions and provides notes explaining the changes separate English and French versions of a document containing a list of the [201 new questions](#). The documents are available for download from the RAC website at: www.rac.ca/esc_cne.

We are extremely grateful to the 20 Radio Amateurs from nine provinces who gave so freely of their time and expertise to bring this enormous project to a successful conclusion. This is the

combined work of a large group of RAC members from across Canada. All were instructors in courses or Accredited Examiners (AEs), or both. The two most prominent were François Daigneault, VE2AAY and Dave Newcombe, VE3WI, who dedicated endless hours to this very exacting project.

The other members of the committee were:

- Mark Richardson, VA3OBO
- Francis Pitre, VA6FP
- Tony Fonseca, VA7TF
- Yvon Hachey, VE1VON
- Gaétan Trépanier, VE2GHO
- Michel Dumais, VE2SIG
- Rod Clifton, VE3ISO
- Geoff Bawden, VE4AE
- Peter Driessen, VE7AB
- Don Tolson, VE7ATJ
- Frank Vanderzande, VE7AV
- Sandy Wohl, VE7SFW
- John Schouten, VE7TI
- Frank Davis, VO1HP
- Al Penney, VO1NO
- Brent Taylor, VY2HF
- Fred Archibald, VE1FA
- Dave Goodwin, VE3KG

Most of these volunteers are also working on the update to the Advanced Question Bank. This work is expected to be complete in 2026.

~ Dave Goodwin VE3KG
regulatory@rac.ca



RAC Amateur of the Year 2024: Mike Kelly

The RAC Board of Directors takes great pleasure in selecting Mike Kelly, VE3FFK, of Ottawa, Ontario as the recipient of the RAC Amateur of the Year Award for 2024.

Through the RAC Amateur of the Year Award, Radio Amateurs of Canada recognizes the outstanding contributions made by Canadian Amateurs. The RAC Board considers nominations for the RAC Amateur of the Year Award and presents it if and when the nomination demonstrates the exceptional contribution made. If there are several nominations the best for that year is approved.

With over five decades as an Amateur, Mike Kelly, VE3FFK, has volunteered countless hours as a member of the Ottawa Amateur Radio Club (OARC).

“My Amateur career began as a teenager intrigued by the sounds of Morse on an old ‘all wave’ radio, and wanting to figure out what those guys were saying. That led to a course with the Ottawa Amateur Radio Club (OARC) and eventually, reluctantly, a few Executive positions there over the years. One of those positions was the club’s designated Delegated Examiner in around 1993, something I still enjoy doing.

An interest in public service events led to several years volunteering for the Canadian Ski Marathon, the Rideau Lakes Bicycle Tour, several car rallies, soccer tournaments and road running events. Other interests included bicycle mobile HF and VHF operating, and portable operation before it became as popular as it is today.”

In December 2008, Mike joined a team of dedicated volunteers who provided much-needed support at RAC Headquarters every Wednesday and he continues to do so to this day. His responsibilities include managing and publishing the Silent Key List for The Canadian Amateur (TCA) and overseeing the Carl Everson Memorial Silent Keys List - tasks that demand extensive research, correspondence and writing every week. Mike plays a crucial role in supporting RAC elections by helping coordinate ballot distribution, reception and counting to

ensure a fair and timely process. His additional commitment to various administrative tasks and ongoing assistance to the Office Manager highlights his invaluable support to RAC operations.

In January 2023, while returning from a 160m CW contest with Craig Delmage, VE3OP, Mike mentioned his long-standing wish for an Amateur station at RAC Headquarters to replace the station that had been closed years before. After discussions with RAC officials, a plan was launched in celebration of RAC’s 30th Anniversary to refurbish the RAC Headquarters in Ottawa to include a more modern office, a multipurpose room for meetings and other activities, and a flagship radio station. The refurbishment project required over 14 months of work on a daily basis involving: proposal writing; new office design; removal of old equipment/furniture; construction oversight; volunteer team coordination; and acquisition of new equipment/furniture.

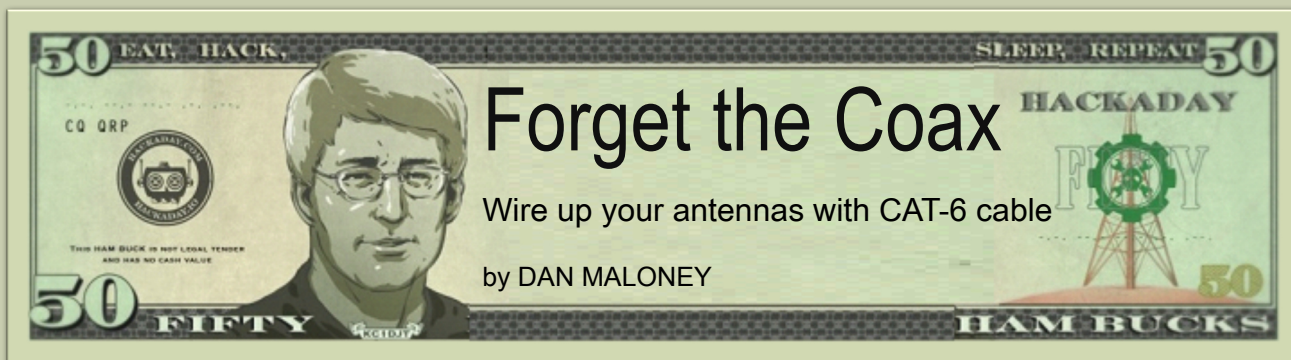
With the completion of the office refurbishment project, Mike and Craig turned their attention to the planning, design and installation of RAC’s first-ever flagship radio station VE3RHQ. When completed, the new flagship station will serve many essential purposes including: public service and emergency communications; education and training opportunities; community engagement; supporting local clubs and other organizations; and promoting Amateur Radio throughout Canada and internationally through contests, events and award chasing.

Radio Amateurs of Canada sincerely congratulates Mike Kelly, VE3FFK, on his appointment as Amateur of the Year for 2024.

For more information about the RAC Amateur of the Year Award please visit:

<https://wp.rac.ca/rac-amateur-of-the-year/>

Allan Boyd, VE3AJB
RAC President and Chair



Forget the Coax

Wire up your antennas with CAT-6 cable

by DAN MALONEY

These days, anything with copper in it is expensive. If you doubt that, a walk into any Home Depot electrical department, where the wire is locked up tighter than Fort Knox, will prove otherwise. Coaxial cable is a particularly expensive species, which is a pity for hams and other radio enthusiasts since it's the only thing we can use for antenna feedlines.

Or is it? Steve VE6WZ has found a way to use [ordinary Cat 6 Ethernet cable for antenna feed lines](https://hackaday.com/2025/01/15/forget-the-coax-wire-up-your-antennas-with-cat-6-cable/) that seems pretty clever. As he points out, Ethernet cables are designed to handle frequencies that coincide nicely with most of the interesting amateur radio bands, and their insertion losses are acceptably low, especially for Cat 6 cable. The twisted pairs are also a balanced system that's good at rejecting common mode noise. Cat 6 cable also has four pairs of conductors, allowing you to feed multiple antennas with one cable, or to distribute power to amplifiers and switches along with antenna feeds.

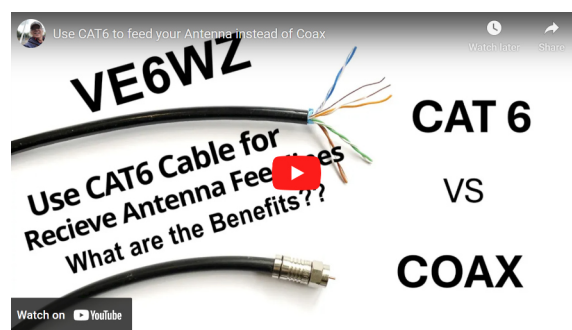
The downside? Cat6 conductor pairs have a characteristic impedance of around 100 ohms, which isn't a match for the 50-ohm feedline impedance universally expected by ham radios. Also, the relatively small wires probably aren't up to the job of carrying much current, limiting their use to feedlines for receive-only antennas. That works for [Steve] since he uses Cat 6 to support his massive Beverage antenna farm (Beverage antennas are non-resonant

horizontal antennas that live close to the ground and point in the direction of the signal, rather than broadside to the signal as with a resonant antenna like a dipole.) Each antenna in his farm has a trans-impedance amplifier that needs to be powered, plus switching relays so he can turn the correct antennas on for the signals he wants to receive. He describes the amps in detail in the video below, along with the custom impedance-matching transformers he uses and the combining gear.

~ Dan Maloney

Read the full article on-line at <https://hackaday.com/2025/01/15/forget-the-coax-wire-up-your-antennas-with-cat-6-cable/>

Click on the video below:





Look what you can do with it

based on an article in RadioWorld by MARK PERSONS W0MH

As an amateur radio course instructor, I'm often asked by students why they need to know Ohm's Law. Many see no bearing between Ohm's Law concepts and the relationship to pushing the PTT on their handheld transceiver. Despite being over 100 years old, Ohm's Law remains as relevant as ever in modern technology. Understanding its practical applications can help anyone working with electrical systems, from hobbyists to engineers, improve their troubleshooting, design, and optimization processes.

How Ohm's Law Impacts Electrical Design

One of the primary areas where Ohm's Law is applied is in the design and specification of electronic circuits. Electrical engineers often rely on this principle when designing components such as resistors, capacitors, and inductors, as well as for determining the power requirements for various devices.

For instance, when designing a power supply for an electrical appliance, the engineer uses Ohm's Law to calculate how much current will flow through the circuit at a given voltage. By adjusting the resistance of different components, the engineer can control the current to ensure the device operates safely

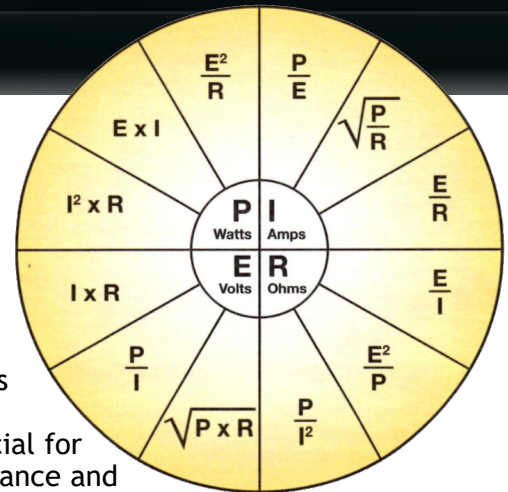
and efficiently. This ability to manage current flow is crucial for optimizing performance and preventing damage to sensitive electronic parts.

Troubleshooting Electrical Systems

Ohm's Law is also an invaluable tool for troubleshooting electrical circuits. By measuring the voltage and current at various points in a circuit, an engineer or technician can easily identify areas where the system is under-performing or malfunctioning.

For example, if a device is not working properly, the technician might measure the voltage at different points and compare it with the expected values based on the device's specifications. If there is a discrepancy, they can apply Ohm's Law to calculate the expected current, which can help pinpoint if there's excessive resistance or an open circuit. This allows for quicker identification of the issue and, ultimately, faster repairs.

In more complex scenarios, such as circuit boards with multiple components, Ohm's Law helps diagnose whether the correct amount of current is reaching each part. The law



simplifies what could otherwise be a confusing maze of electrical parameters, enabling effective diagnosis and solution of issues.

Applications in Energy Consumption and Efficiency

Another key application of Ohm's Law is in understanding and managing energy consumption in electrical systems. The formula for electrical power, which is a key aspect of efficiency calculations, can be derived from Ohm's Law:

$P = E \times I$ where P is the power (measured in watts)

Using this equation, technicians can determine how much power an electrical device or circuit consumes. The insight gained can help in the optimization of energy use, ensuring that systems are operating efficiently without overloading or wasting energy. For example, when designing lighting systems, the voltage and current requirements can be used to select appropriate resistors and to ensure the lights are energy-efficient.

Moreover, understanding the relationship between voltage, current, and resistance also allows for smarter decisions about components. For instance, lower resistance can increase the current flow, thereby boosting the power output, but it may also increase energy consumption. Conversely, adjusting the resistance to decrease the current flow can lead to lower energy use, which can be crucial for energy-efficient designs.

Application in Audio and Communication Technologies

Ohm's Law plays a crucial role in audio and communication technology, especially in areas like signal processing and transmission. In audio electronics, Ohm's Law helps engineers understand the relationship between speakers, amplifiers, and other components. The impedance of speakers (a form of resistance) is key in ensuring that the amplifier delivers the correct amount of current without damaging the components.

For instance, if a speaker has a low impedance, it will draw more current at a given voltage, which can potentially overload an amplifier. On the other

hand, a high impedance speaker will draw less current. By using Ohm's Law, engineers can match the right speaker to an amplifier, ensuring optimal sound quality and system longevity.

In the realm of communication systems, Ohm's Law aids in determining the correct voltage and current levels for signal transmission over various distances. The transmission of signals through wires and cables is heavily dependent on these calculations, especially when the goal is to maintain signal strength over long distances without degradation.

Ohm's Law in Modern Innovations

Even in the age of advanced technologies like semiconductors and microelectronics, Ohm's Law remains relevant. In fact, as electronic devices have become more compact and sophisticated, understanding the fundamentals of Ohm's Law becomes even more essential. With components becoming smaller, engineers need to work with more precise measurements of resistance, voltage, and current to ensure that each part functions optimally without interference or failure.

For example, in battery-powered devices, Ohm's Law is used to predict the battery life based on the resistance of the circuit and the expected current draw. Engineers can calculate the most efficient power consumption rates and ensure that the device functions as intended without draining the battery too quickly.

Ohm's Law provides a simple yet powerful tool for anyone working with electricity or electronics. From the design and optimization of circuits to troubleshooting and energy management, its applications are vast and integral to the development of reliable, efficient electrical systems. Whether it's understanding power consumption, improving energy efficiency, or ensuring the safe operation of devices, Ohm's Law offers a critical framework for electrical engineers and technicians alike.

The full article appeared in RadioWorld:

<https://www.radioworld.com/tech-and-gear/tech-tips/look-what-you-can-do-with-ohms-law>

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Satellites

Stranded: An Unlikely Friendship

by LIZ AMSDEN

Once upon a time there was a young woman named Margaret King from New Haven, Connecticut who received a bachelor's degree in Russian from Boston University and then studied Slavic linguistics at the University of Chicago.

Her life trajectory then took a detour when she obtained her master's degree in education and found work as a specialist for children with reading disabilities first in Illinois, then in Connecticut where she also worked with incarcerated adults facing literary challenges. Having surmounted learning issues herself as a child, she firmly believed that every person deserved a decent education no matter what.

Maggie had a wide range of outside interests, one of which led to her obtaining an entry-level ham radio license in 1976.

A year later, having married an Australian correctional officer she met in Connecticut, Maggie - now Iaquinto - joined her husband in the state of Victoria and found work with the Council of Adult Education for whom she created a kit on teaching adults how to read, which remained in use for many years.

Maggie earned her Australian amateur radio license and started communicating with other ham radio enthusiasts. And, after her husband was transferred to a small town in western Victoria, she landed a variety of



Maggie Iaquinto VK3NQQ



positions culminating in running a computer lab where she polished her tech skills.

Upon divorce, she and her sons moved to Melbourne where she taught information technology in a number of educational facilities and continued connecting with radio enthusiasts around the globe in Morse code using the callsign VK3NQQ and then, as technology improved, by voice through computer connection.

In 1990, she made contact with Musa Manarov callsign U2MIR, on-board the Russian space station Mir and cementing her place in history by helping him set up a packet radio on the station establishing the first computer-to-computer civilian communication between an amateur radio operator on Earth and a cosmonaut in space.

Maggie communicated pretty much daily with Manarov and his colleagues using the Russian she had learned in college, while watching her boys play in the yard or by handheld while commuting to and from work.

Many evenings Maggie would watch the point of light that was the Mir space station cross the night sky as she conversed with cosmonauts eager to hear the news about what was transpiring behind the Iron Curtain free from Soviet censorship.

Manarov returned to Earth after 175 days in space.

Russian cosmonaut Sergei Krikalev who had been part of a joint Soviet-French science mission in 1988, was the flight engineer for the ninth Mir mission. Accompanied by Commander Anatoly Artsebarsky and British astronaut Helen Sharman, Sergei was aboard the Soyuz TM-12

launched on May 19, 1991, as the political cohesion of the Soviet Union began to unravel.

Sharman returned to Earth with the previous crew while Krikalev and Artsebarsky were scheduled to stay until October conducting EVAs, experiments and maintenance. Sergei took over from Manarov, communicating as U5MIR with a number of ham radio operators including Maggie who set up a makeshift digital bulletin board with uncensored news and

information on the ongoing implosion of the Soviet Union for the cosmonauts.

Sergei agreed to extend his stay on Mir for a few months more with Soyuz TM-13's Commander, Alexander Volkov, because the replacement engineer's slot had been filled by a Soviet-Kazakh cosmonaut-researcher, Toktar Aubakirov, without the training for long-term missions, as an attempt to encourage the then-Kazakh SSR to continue space operations.

Aubakirov and Franz Viehböck, who also arrived on Soyuz TM-13 as the first Austrian in space,

photographed their respective countries from orbit and conducted materials processing and medical experiments before returning to Earth with Artsebarsky, while Volkov remained on Mir with Sergei.

Sergei and Volkov were still in space conducting further experiments and maintenance when the political winds in their homeland blew the Soviet Union into dissolution on December 26, 1991. Since the Baikonur Cosmodrome and the landing area were both located in the now independent Kazakhstan, leaving the future of the cosmonauts literally up in the air.

VK3NQQ enjoyed putting her linguistic skills in Russian from her collegiate days to use, and U2MIR greatly enjoyed the company and hearing news from the western world that was censored in Russia due to Soviet rule and the Iron Curtain. They chatted about all sorts of things. Hear VK3NQQ's son Ben discuss his mother's hobby and her unlikely friendships with cosmonauts in space firsthand on this [audio recording from The World](#).



Sergei Krikalev

Maggie was in daily radio communication with Sergei throughout, exchanging personal opinions on a wide variety of subjects including discussing the drama of the politics playing out in Russia and the West.

It wasn't until March 25, 1992, that Sergei and Volkov finally descended to the planet surface. News media referred to the

two as the "last Soviet citizens" since they had launched from Soviet Russia but returned to the new Republic of Kazakhstan.

Sergei spent a total of 311 days in space, twice as long as originally planned.

For hard science buffs, the length of time the cosmonaut spent traveling at high speed in the space station slowing clocks microscopically, dilating time as addressed in the velocity-time relativity theories of Einstein and others, meant Sergei returned to Earth 0.02 seconds younger than his contemporaries.

Romanian filmmaker Andrei Ujică's 1995 *Out of the Present*, half the budget of which was the cost of launching a 35mm camera to the space station to be operated by those on board, documents Sergei Krikalev's record-setting story.

Over a five-year period, Maggie communicated with 19 cosmonauts, and the story of the unlikely bond she developed remotely with Sergei forms the basis of Ernesto Daranas' 2017 film *Sergio and Sergei*. In it, the connection between a professor and amateur radio enthusiast in Havana and a Mir cosmonaut allows the filmmaker to draw parallels between economic hardships in Cuba at the time and the fall of the Soviet Union.

Maggie's long-distance friendship with Sergei led to an invitation for her and her sons to visit NASA's Johnson Space Center in Houston, Texas in 1994 where Krikalev was training for a shuttle mission.

Upon her death 10 years ago, Maggie laquinto was lauded not only for her contributions to amateur communications from the Earth's surface to stations orbiting overhead but as a polymath whose broad interests ran the gamut from educator, librarian, mother, crafter, and folk dancer to techie, innovator, car enthusiast, writer and internet addict.

As of January 18, 2024, Sergei Krikalev became Vladimir Putin's special envoy for international space cooperation, seeking to reform an industry suffering from US-led sanctions.

~ This article was first published in citywatchla.com

Liz Amsden resides in Vermont and is a regular contributor to CityWatchLA on issues that she is passionate about. She can be reached at LizAmsden@hotmail.com.

WY6Y's Xiegu G90 Ammo Can Build

In the last Communicator I wrote an article about my new POTA transceiver, the Xiegu G90. In this [video](#) WY6Y combines his love of woodworking with his love of ham radio and creates an ammo can case for the Xiegu G90 using some scraps of leopard wood left over from another project that he had laying around the house. The audio is greatly improved and ventilation has not been issue with the fan and vent he added to the case. ~ WY6Y



A satellite primer

The beeping of Sputnik, a lone traveler in the vast expanse above, sparked a revolution in communication. While those early signals were one-way, today's satellite technology offers ham radio operators a chance for two-way conversations across vast distances. This guide, courtesy of [W2PAK], simplifies the process of reaching for the stars.

The first hurdle? Locating these celestial repeaters. [W2PAK] recommends the GoSatWatch app, a smartphone tool that pinpoints overhead satellites based on your location. Once you've identified your target, it's time for the hardware. Surprisingly, satellite communication [doesn't require a](#)

[fortune](#). A dual-band handheld radio, essential for the different uplink and downlink frequencies, is the core component.



[W2PAK] even demonstrates how to build a [simple, effective antenna](#) from readily available parts in a separate video. The total cost? Often under \$100.

Beyond the equipment, [W2PAK] also provides a primer on satellite contact protocols and etiquette, ensuring newcomers can confidently join the conversation. These orbiting repeaters offer a significant advantage over terrestrial systems, especially for entry-level licensees restricted to VHF and UHF. They extend range dramatically, surpassing ground-based repeaters and line-of-sight limitations.

The allure of satellite communication extends beyond licensed operations. [W2PAK] highlights projects like [downloading weather imagery](#) directly from weather satellites, a fascinating pursuit accessible to anyone. Whether you're a seasoned ham or a curious newcomer, the skies are no longer the limit.

~ Based on an article by [Bryan Cockfield in Hackaday](#)



Copy CSV Excel PDF Print			
Country	Talkgroup	Name	
Global	95150	Global NorCal 5150	LH Hoseline Wiki
Global	97911	Red Américas EMCOM	LH Hoseline Wiki
Global	98003	Reddit	LH Hoseline Wiki
Global	98006	AMSAT	LH Hoseline Wiki
Global	98008	Military Veterans	LH Hoseline Wiki
Global	98012	LBGTQ	LH Hoseline Wiki
Global	98638	WVNET	LH Hoseline Wiki
Global	983872	9-TETRA	LH Hoseline Wiki
AD	213	Andorra	LH Hoseline Wiki
AE	430	United Arab Emirates	LH Hoseline Wiki

Showing 51 to 60 of 1,675 entries

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A DMR Primer

Listen in your browser

by HACKADAY - AL WILLIAMS

Here is an article that describes how to listen to digital ham radio conversations online using a web browser, specifically focusing on the Brandmeister network and its DMR (Digital Mobile Radio) system.

Key takeaways:

- **Digital Ham Radio Evolution:** While traditional ham radio relied heavily on physical radios and repeaters, the rise of digital technology and internet connectivity has revolutionized the field.
- **Brandmeister Network:** This popular [network](#) allows users to connect and communicate through various means, including dedicated radios, internet hotspots, and even directly from computers.
- **What's the Hoseline?** It shows activity across the network as a bunch of boxes indicating [recently active talk groups](#). Boxes with red lines around them have people actively talking on them. The others have been recently active.

- **Listening In:** The article provides a step-by-step guide on how to use the "Hoseline" feature on the Brandmeister website to listen to live conversations on different talk groups.
- **Finding Conversations:** It offers tips on how to navigate the vast number of talk groups, including filtering by region, using regular expressions, and searching for specific groups or nets.

Essentially, this article provides an accessible entry point for amateurs to access DMR repeaters easily and without specialized gear, and for anyone curious about ham radio, allowing them to experience the digital realm of this hobby without the need for anything other than their browser.

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Read the full article at:

<https://hackaday.com/2025/01/15/no-ham-license-listen-anyway-in-your-browser/>

TECH TOPICS

Those Darn Wall-Wart Power Supplies!

What to know about using these ubiquitous devices

based on an article in RadioWorld by MARK PERSONS W0MH



The article "Those Darn Wall-Wart Power Supplies!" by Mark Persons delves into the ubiquitous presence and functionality of wall-mounted AC adaptors, commonly known as wall-warts. These devices have been a staple in providing electricity to low-power devices since the 1970s, powering everything from clock radios to Wi-Fi routers, cell phone chargers, and more.

Wall-wart power supplies are typically small, measuring about 2 by 2 by 3 inches, and are designed to provide low-voltage AC or DC power. They are often UL-listed, ensuring safety by isolating the dangerous 120 VAC from the equipment they power. Over the years, these power supplies have evolved from simple transformers to more complex switching power supplies, which are lighter and capable of handling more power.

Switching power supplies convert incoming 120 VAC to well-regulated DC, providing clean DC output without the ripple voltage that older supplies had. This regulation helps maintain the desired output voltage even during voltage spikes and brownouts. However, these supplies can emit objectionable electrical noise, which can interfere with RF signals.

That issue is well-known to amateur radio operators who often have to conduct extensive troubleshooting to locate sources of RF noise.

The article also highlights the challenges of troubleshooting and repairing wall-wart power supplies. For instance, a failed filter capacitor in an older power supply can cause significant issues, and there is a case study of a warning light not functioning properly. The author emphasizes the importance of marking power supplies for easy identification during troubleshooting and recommends discarding or recycling supplies that run too hot to prevent future problems.

Wall-wart power supplies are essential yet often overlooked components. Their evolution from simple transformers to sophisticated switching power supplies has improved their efficiency and functionality, but they still present challenges in terms of RF noise and maintenance. The article provides valuable insights into the workings of these devices and offers practical advice for engineers and technicians dealing with them.

The original article is at: <https://www.radioworld.com/tech-and-gear/tech-tips/those-darn-wall-wart-power-supplies>

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by JOHN SCHOUTEN VE7TI

During the final months of the Second World War, as Europe lay in ruins and millions faced starvation, a remarkable humanitarian mission took place that demonstrated the power of compassion midst the chaos of war. Known as Operations Manna and Chowhound, these missions involved the Royal Air Force (RAF) and allied forces dropping food supplies to the starving population of the German-occupied Netherlands. This April, nearly 80 years later, the memory of Operation Manna is being honoured through a special event amateur radio station, [Manna @ 80](#), which aims to commemorate this extraordinary chapter in history and educate a new generation about its significance.

The Dutch Famine of 1944-1945

By the autumn of 1944, the Netherlands had endured five years of Nazi occupation. The southern part of the country had been liberated following the Allied advance after D-Day, but the northwest regions remained under German control. In retaliation for Dutch support of the Allies, the German occupiers imposed a brutal blockade, cutting off food and fuel supplies to the civilian population. This, combined with an unusually harsh winter, led to what became known as the *Hongerwinter* (Hunger Winter), a famine that claimed the lives of approximately 20,000 Dutch citizens, including my grandfather.



John Schouten VE7TI was born in The Netherlands. Manna 80 has special significance given his family experienced and survived the hunger winter of 1944-1945.

From stories related by my parents and older siblings, the situation was dire. People resorted to eating tulip bulbs, grass, and even rats to survive. Malnutrition and disease were rampant, and the population was on the brink of mass starvation. Because of the cold winter, people started to remove any burnable material for heat. I'm told that hardly a stick of furniture, and only every third staircase step in our third floor apartment was left after the war ended.

Operation Manna and Operation Chowhound: The Food Drops Begin

Appeals for help were made to the Allies, and in response, a plan was devised to deliver food by air to the starving people. [Operation Manna and Operation Chowhound](#) were humanitarian food drops to relieve the famine in Holland behind Nazi lines, in late April 1945, just weeks before the end of the war in Europe.

Operation Manna

The British operation started first. The operation was named after the biblical story of Manna, the bread from heaven that sustained the Israelites during their exodus. It was a fitting name for a mission that aimed to deliver life-saving food to the Dutch population.

The planning of the operation was initially done by the Royal Air Force. The first of the two RAF Avro Lancasters chosen for the test flight, the morning of 29 April 1945, was nicknamed Bad Penny, as in the expression "a bad penny always turns up". This bomber, with a crew of seven young men (five from Ontario, Canada, including pilot Robert Upcott of Windsor, Ontario), took

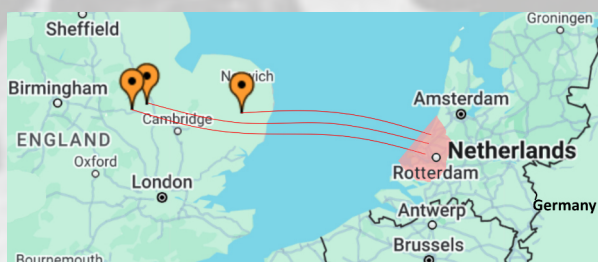
off in bad weather despite the fact that the Germans had not yet agreed to a ceasefire. Bad Penny had to fly low, down to 50 feet (15 m), over German guns, but succeeded in dropping her cargo and returning to her airfield.

Operation Manna then began in earnest. British aircraft from 1 Group, 3 Group, and 8 Group took part, with 145 sorties by Mosquitoes and 3,156 by Lancaster bombers. The bomber crews were experienced with bomb drops from 20,000 ft (6,000 m) but this operation was performed at a height of 490 ft (150 m), some even flying as low as 390 ft (120 m), as the cargo did not have parachutes. The drop zones, marked by Mosquitoes from 105 and 109 Squadrons, were: Katwijk (Valkenburg airfield near Leiden), The Hague (Duindigt horse race course and Ypenburg airfield), Rotterdam (Waalhaven airfield and Kralingse Plas) and Gouda. Bomber Command delivered a total of 6,680 tons of food.

Operation Chowhound

During Operation Chowhound (1-8 May 1945), the United States Army Airforce dropped 4,000 tonnes of food. In total, over 11,000 tonnes of food were dropped over the 10 days. By that time, 20,000 people had died from starvation and 980,000 were malnourished.

The RAF, along with the Royal Canadian Air Force (RCAF) and the United States Army Air Forces (USAAF), and crews from Australia, and Poland, played a central role in the operation. Over the course of several days, hundreds of aircraft, including Lancaster and Mosquito bombers, were re-purposed to carry food instead of bombs. These planes flew at low altitudes to drop thousands of tons of food, including flour, dried eggs, margarine, and chocolate, into designated areas in the Netherlands.





The food drops were not without risk. The aircraft had to fly at low altitudes to ensure the food parcels reached the ground intact, making them vulnerable to anti-aircraft fire. However, the German forces, aware of the humanitarian nature of the mission, largely refrained from attacking the planes. In some cases, German soldiers even helped distribute the food to the Dutch population.

Operation Manna continued until early May 1945, when the Netherlands was finally liberated. In total, over 11,000 tons of food were delivered, saving countless lives and providing a glimmer of hope in the darkest days of the war.

The Legacy of Operation Manna

Operation Manna remains a powerful symbol of humanity and solidarity in the face of adversity. It demonstrated that even in the midst of a brutal conflict, acts of compassion and cooperation could prevail. For the Dutch people, the food drops were a lifeline that they would never forget. Many survivors of the famine have spoken of their gratitude to the

Allied aircrews who risked their lives to deliver the much-needed supplies. To this day, Allied cemeteries are cared for and children educated on the history of this conflict, and the sacrifices of the allies.

The operation also highlighted the importance of international cooperation in addressing humanitarian crises. It was a joint effort involving British, Canadian, and American forces, working together to alleviate the suffering of a civilian population caught in the crossfire of war.

There is a touching YouTube video describing the operation and its impact at: https://youtu.be/0PwhYFdzy_Q.

There is also a [Children's page](#) with age-appropriate activities, and a [Youth page](#) that includes an introductory guide to amateur radio.

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Manna @ 80: Honouring the legacy through amateur radio



To commemorate the 80th anniversary of Operation Manna, [special event amateur radio stations](#) will be activated from April 25 through 27, 2025. This initiative aims to honour the memory of those who participated in the operation and to educate the public about this remarkable chapter in history. It is fitting that it occurs the week after World Amateur Radio Day on April 18th.

Amateur radio has a long tradition of commemorating historical events and fostering international communication. The Manna 80 special event station will operate on various

amateur radio bands, allowing operators from around the world to make contact to commemorate and learn about Operation Manna. Each contact will serve as a reminder of the humanitarian spirit that defined the mission.

The primary Manna 80 station will be set up in the Netherlands. Other stations will operate from airbases in England, where the flights departed, and around the globe in countries that participated with military personnel. Operators will use vintage and modern equipment to communicate with other radio



enthusiasts globally, sharing stories and information about Operation Manna.

In addition to the radio operations, the [Manna @ 80](#) event will include exhibitions, lectures, and educational programs aimed at raising awareness about Operation Manna and its significance. Schools and community groups will be encouraged to participate, ensuring that the legacy of this humanitarian mission is passed on to future generations.

The Importance of Remembering Operation Manna

As the years pass, the number of people who remember Operation Manna firsthand dwindles. It is more important than ever to preserve the memory of this mission and the lessons it teaches us. Operation @ Manna reminds us of the power of compassion, the importance of international cooperation, and the resilience of the human spirit in the face of adversity.

The Manna @ 80 special event stations are not just a tribute to the past; it is also a call to action for the present and future. In a world still plagued by conflict and humanitarian crises, the story of Operation Manna serves as a powerful reminder of what can be achieved when nations come together to help those in need.

Operation Manna was a shining example of humanity during one of the darkest periods in history. The food drops not only saved lives but also demonstrated that even in the midst of war, acts of kindness and solidarity could make a difference. As we approach the 80th anniversary of this remarkable mission, the Manna @ 80 special event station offers a unique opportunity to honor its legacy and ensure that its story continues to inspire future generations.

Through the airwaves, amateur radio operators will connect with people around the world, sharing the story of Operation Manna and celebrating the spirit of compassion that defined it.

The Teams

The following [teams](#), each representing their nation's involvement will be participating, making this a truly international event.

PH80MAN

[PH80Man](#) is in the Netherlands, run by Sander PD9HIX, Erwin PA3EFR, and other members of the Plusscouts PA3EFR/J, a Dutch Radio Scouting Fellowship, from former operation



Manna drop zone 5 Duindigt, close to the city of The Hague in the Netherlands. On the 25th, 26th, and 27th of April 2025, the team intends to operate 24 hours a day to contact as many international amateurs as possible to spread awareness.

The station is planned to be open to the public. Invitations to school children have been sent to visit the station on the 25th. On the 26th it will be Scouts who are invited. The 27th will be a day without pre-organized visitors.

The radio communications will be on HF, VHF, and DMR. Please keep an eye on the clusters to find the right current operating frequencies.

Here is the [QRZ Link](#) and the [grid.radio position](#) information. The DMR Brandmeister talk group is 204-321, and here is the URL of the [WebSDR Station](#).

GB80MAN

GB80MAN will run from the [International Bomber Command Centre](#) Lincoln UK operating on the 25th, 26th and 27th of April 2025.



Operation will commence on April 25th, which will be a day of School visits to the station and a service to commemorate Anzac day, on the 26th there will be a family day organized by the teachers at the International Bomber Command Centre, and the 27th



will be a day of operation, still open to the public but without pre-organized visits. The team intends to operate long hours to contact as many people as possible and spread awareness.

Operation will be on HF, VHF, and DMR, and live streaming of the station will take place when it is suitable to do so.

Here is the [QRZ Link](#).

GB8MAN

GB8MAN is the callsign of the [Lincoln Shortwave Radio Club](#) from RAF Binbrook a former Operation Manna airfield. Here is the [QRZ link](#).

VK80MAN



Will Operate from April 12th to June 30th, from various locations in Australia but especially during our event on the 25th, 26th, and 27th of April. They will operate HF, VHF and DMR.

Here is the [QRZ Link](#).

SN80MAN

The [SP5KAB Radio Club](#) will operate in Poland with the Callsign [SN80MAN](#) to pay tribute to the many brave Polish airmen who were stationed in the UK, who took part in every aspect of RAF operation during WW2, and the crews of the 300th Masovian Squadron RAF / PAF, who took part in operation Manna from RAF Faldingworth Lincolnshire in April/May 1945. SP5KAB the Club callsign is one of the oldest ham radio call signs issued in Poland after 1945.

VB7MAN

In Canada, Surrey Amateur Radio Communications (SARC) has been granted special event callsign VB7MAN for 60 days during April and May. We will be on the air from our training station and elsewhere prior to, during, and after the event and will seek involvement of the high school students from our RF Communications class.



Contacts with Europe can be sporadic from our location but we are generally able to contact North and South America, Asia, and Oceania. We have created a QSL card to commemorate the event. The card bears the \$100 Canadian gold and silver coin struck in 2020 for the 75th anniversary. Here is our [QRZ link](#).

The Canadian teams closest to Europe will be operating from their club station as VE1UW. Stuart VE9CF in New Brunswick is hoping his new club will operate under the call VE9AAC. He was looking into perhaps activating from a former WW2 air base or another location of significance to tie in with the event.

As of this writing, teams in the US are still being organized.

~ John VE7TI

Some radio trivia...

During the German occupation the Dutch were not allowed to listen to the BBC and were forced to hand in radios. So many made their own wireless receivers that they then hid or camouflaged.

This one was hidden in a soap container, made with parts stolen from the Phillips factory.



Ham Radio Gizmos Platform Launches Documentary Series



Ham Radio Gizmos has launched a documentary series aimed at educating and inspiring the global ham radio community.

Spearheaded by Lee Love N2LEE, the series combines his background in marketing, television production, and commercial photography. Love has curated a collection of documentaries that aim to be both informative and inspirational, although he makes some distortion of the facts.

“Our documentary series is a journey through time, showcasing the untold stories of ham radio's past while highlighting the breakthroughs that continue to shape its future,” Love explained. His vision is to create a platform where enthusiasts can gain a deep understanding of how historical milestones in ham radio have directly influenced contemporary technology and practices.

What to Expect from the Series

Historical Exploration: The series uncovers the lesser-known stories that have shaped ham radio, from its inception to its role during pivotal moments in history. Unfortunately, in the historical video, [I Bet You Didn't Know this about Ham Radio](#), the pivotal US Radio Act of 1912 is not even mentioned, nor is Tesla, and one is left with the impression that no other country took part in the development of wireless.

Modern Innovation: Viewers are told how past innovations have led to the current state of ham radio technology, including digital modes, satellite communications, and beyond. Unfortunately, one example provided is Echolink. Although an innovation, it is far less innovative than IRLP which actually requires the use of a transceiver, while Echolink does not and can be done solely from a cell phone or computer.

Expert Storytelling: With Lee Love at the helm, the documentaries are promoted to offer a narrative that is both authoritative and engaging.

Love loves AI... The series contains archival footage, although some is obviously AI generated with fictional steampunk transceivers [*as shown above*] that hardly mimic the real thing. This is unfortunate and lessens the credibility of what would otherwise be an interesting journey through amateur radio history.

Ham Radio Gizmos says that it is not just about watching; it's about learning and doing. The platform aims to connect the dots between where ham radio has been and where it's heading. This educational endeavor is particularly aimed at both newcomers who are curious about the hobby and seasoned operators looking for deeper insights into their practice.

Aiming to be a resource for ham radio enthusiasts, Ham Radio Gizmos offers more than just documentaries. The platform is dedicated to fostering a community that values both the legacy and the potential of ham radio.

~

Contact:

Lee N2LEE
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Ham Radio Gizmos

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Website: HamRadioGizmos.com



An Off-Center Fed Sleeve Dipole

The urge to experiment is always front and center

by JOHN CORBY VA3KOT

At Ham Radio Outside the Box the urge to experiment is always front and center. Isn't that what radio amateurs are supposed to do - continuously improve our knowledge and hone our expertise? In the minds of the government departments that give us our spectrum allocations we are a reserve resource of communications expertise to be called into public service when needed.

Even if public service were not part of the picture some of us are sufficiently intrigued by the mysteries of the universe to be self-motivated when it comes to experimentation. Ever wonder exactly how a radio signal gets from one place to another - even through the vacuum of space?

In that spirit I was suddenly smacked in the head by yet another brilliant idea recently. I had been corresponding with a Ham Radio Outside the Box reader about the T2LT antenna I built some time ago. A T2LT (Tuned Transmission Line Trap) is also, and perhaps more commonly, called a Sleeve Dipole.

Do you believe in magic?

A Sleeve Dipole is a cunning idea that employs the Skin Effect to achieve a physically end-fed, but electrically center-fed dipole antenna. It comprises a quarter wavelength of coax with the center conductor connected to a quarter wavelength of wire. The braid of the coax is unconnected at its far end. Now

John Corby VA3KOT resides in Owen Sound, Ontario but is more often found operating CW out in the "Big Blue Sky Shack". He especially enjoys activating parks for the POTA program and blogging about his experiences at HamRadioOutsidetheBox.wordpress.com

here's the magic: the coax braid is actually two conductors in one. Current flows along the inner surface of the braid toward the feedpoint and back along the outer surface of the braid. The outer braid surface becomes one half of the dipole, while the inner braid surface and center conductor form the transmission line. The quarter wavelength of wire is, of course, the other half of the dipole.

The transmission line is terminated at the electrical feedpoint at the center of the antenna where it is radiated. *[How? My theory, as a long-in-the-tooth physics graduate, is that the signal is conducted along the plane of the space-time continuum; but back to the subject of antennas].*

Current flowing in the reverse direction along the outer braid surface also needs a termination, which is arranged by means of a choke at the physical (end) feedpoint. The choke has no effect on the current flowing along the inner braid surface, but significantly attenuates the current flowing back towards the radio along the outer braid surface.

A dipole is a dipole is a dipole

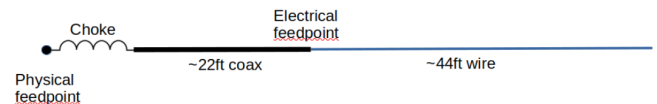
Now here's where my brain's neurons began firing on all cylinders. A dipole is a dipole is a dipole. Ignore the magic bit for a minute. A dipole can be fed anywhere along its length nicht wahr? It is typically fed in the middle, but End-Fed Half Wave (EFHW) antennas are currently very popular among those of us who like to operate out in the Big Blue Sky Shack. An EFHW is like a dipole that is fed at one end.

Another variant is the Off-Center Fed Dipole (OCFD) that is typically fed at around one-third of its length. But the reason end-fed antennas are so popular with portable outdoor operators, such as POTA and SOTA etc, is that end-fed antennas are easier to erect in the field. Now what if we applied the skin effect magic to an OCFD, would it work?

An EFHW antenna is resonant on its fundamental frequency and may also be resonant on its odd harmonics (see the post "Is an End-Fed Half-Wave Antenna Truly Multiband"). An OCFD is

resonant on its fundamental frequency plus its even harmonics. An OCFD is typically used with a "tuner" (technically an "Antenna Matching Unit") to make it usable on multiple bands.

So, if this works, we can build an Off-Center-Fed Sleeve Dipole antenna (OCFSD) that is physically fed at one end, for ease of temporary erection in the field, but electrically fed at some other point along its length. Adding a "tuner" should allow us to operate on multiple bands.

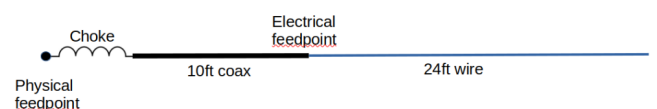


An off-centre fed sleeve dipole

But wait a minute... why not just use an End-Fed Random Wire (EFRW) antenna? It can also be tuned on multiple bands? Yes, but the EFRW requires a counterpoise, the OCFSD does not!



It is mid-winter here in the Great White North and Mother Nature has chosen 2025 to dump an extraordinary amount of snow on us. It ain't easy to pop outside and throw a wire in a tree when there is an accumulation of a couple of feet of compressed icy snow on the ground and the tree branches are bowing down with the weight of the fresh snow that has fallen in the last few days. So, I built a test version to see if this idea is crazy or not. It is a short OCFSD for 20m and up. I can erect this indoors for testing purposes using my RigExpert antenna analyzer.



An off-centre fed sleeve dipole for 20m - 10m



Scavenging bits and pieces from my junkie collection I found 10ft of RG-174 coax, 24ft of wire, and a ham made 1:1 choke (tested using a nanoVNA: >25dB Common Mode Current attenuation) The wire was shortened to 22ft when tuning for best SWR. The SWR will probably further improve when I can get outside to erect the OCFSD properly.

"Common knowledge" holds that an Off-Center Fed Dipole has a feedpoint impedance of around 200 ohms and should be used with a 4:1 impedance transformer to provide a good match to 50 ohms. But Ham Radio Outside the Box lives in downtown Contrarian Thinkerville, so I measured the feedpoint impedance for myself. Impedance transformer? Humbug!

Band	Untuned SWR	Untuned R ohms	Untuned X ohms	Impedance
20m	2.4	21.2	5.39	21.87
17m	10	9.82	48.7	49.68
15m	10	46.4	140.1	147.87
12m	8	78.3	-152.3	171.25
10m	4.3	57.4	-84.5	102.15

If you look at the right hand column of the table above you can see that the measured impedances are less than 4:1 compared to 50 ohms. These can be easily tuned with the Ham Radio Outside the Box "Old Barebones" Z-match tuner (and any other tuner in all likelihood).

Band	Tuned SWR	Tuned R ohms	Tuned X ohms
20m	1.03	50.4	1.61
17m	1.10	52.4	4.48
15m	1.07	47.6	-2.41
12m	1.01	49.6	-0.17
10m	1.10	52.0	4.24

Both the SWR and the complex impedance values are very acceptable when measured after tuning. NB: the above measurements were taken at the physical feedpoint of the OCFSD.

What about the radiation pattern?

A regular dipole has a nice donut-shaped radiation pattern with a low-angle maximum all around the circle. Great for DX and no wasted signal going straight up to warm the angels. Could it be possible that this bizarre variant of a dipole would have the same radiation pattern? EZNEC says yes, it does have a nice a donut radiation on every band although on 12m the pattern starts to develop some baby lobes in the vertical direction. These lobes become a little more prominent on 10m.

That is the state of the science on the Off-Center-Fed Sleeve Dipole at this stage. When the snow has melted and the temperature has returned from its wild swing into double digits with a minus sign in front, we'll get this hunk of wire up in the air and see if we can make some QSOs with it.

~ John VA3KOT



Social Reminder

The Saturday weekly social gathering is once again 'on' at the Denny's Restaurant, 6850 King George Blvd., Surrey BC from 07:30—09:30. All are invited. Afterwards, we will host workshops and will be available to invigilate Amateur Radio exams at the OTC, 5756—142 Street, Surrey from 10-noon.

Bring your ham issues, our Elmers will try to help you sort them out.



Are You a Rag Chewer or a “59 73” Operator?

Looking at orange, red, blue and green on-air personalities

John VA3KOT, one of our regular columnists, has written a lengthy post on his [blog](#) that delves into the controversial topic of “rag chewing” within the amateur radio community, contrasting it with the brevity of contest-style exchanges and digital modes like FT8. John is a CW operator, and explores the motivations and personality types that drive different approaches to amateur radio communication.

He begins by defining “rag chewers” as those who enjoy extended on-air conversations, and notes the tension between them and those who prefer quick exchanges, exemplified by the “59 goodbye” contest mentality. John points to the popularity of FT8, a digital mode that only allows short, impersonal exchanges, as evidence of a shift away from longer conversations, and that outdoor activities like SOTA and POTA typically favor brief contacts due to pile-ups and the need to maximize activations.

He contrasts these quick exchanges with his own enjoyment of weekly half-hour CW rag chews with friends, where they discuss personal topics as diverse as potato crops and antenna repairs. This leads him to a reflection on the typical format of a rag chew: signal reports, names, locations, weather, equipment, and antennas.

While useful for beginners, John compares the inherent value of that compared to the efficiency of a POTA exchange.

The article also raises concerns about privacy during rag chews, particularly when personal information like age, birth dates, and locations are shared. John warns of potential risks from hostile listeners, including foreign governments, hackers, and scammers, referencing the importance of discretion.

Drawing from a consulting course, John introduces established concepts of personality “color groups” (Orange, Red, Blue, and Green) to categorize amateur radio operators. They suggest that contesters might be “Orange” (driven and efficient), rag chewers “Blue” (passionate and people-oriented), and those who stick to basic exchanges “Green” (technically inclined).

Ultimately, John concludes that personality dictates how individuals approach amateur radio. While consultants might categorize hams into distinct groups, the author emphasizes the shared passion for radio that unites the community. Despite differing preferences for communication styles, whether it's the thrill of contesting or the camaraderie of a long chat, the author believes that the common interest in radio is what truly matters.

Its worthwhile [heading to the blog](#) and having a read of the full article.

~





Another Slacker DXpedition

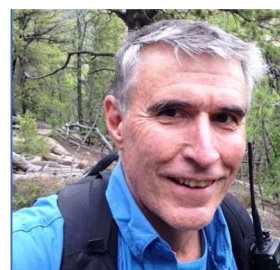
by BOB WITTE K0NR

Operating from countries outside the US can be a lot of fun. I just completed another Slacker DXpedition, this time to the British Virgin Islands. The formula for this type of operation is simple: identify an interesting vacation spot that is also considered DX, travel there with friends and family, take along some compact radio gear, and get on the air. Photo from VP2V operating position for K0NR and K0JJW. A key point is not to overdo the radio operating, or the friends and family will veto any radio activity on future trips. This was not a super-gonzo turbo-charged DXpedition. I just worked in some radio action in between snorkeling and exploring the island. This is referred to as a “holiday style” DXpedition, or maybe it’s just the slacker approach.

VP2V British Virgin Islands

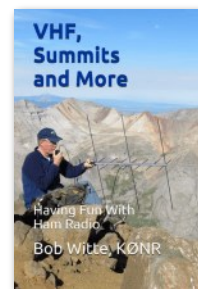
The idea for this trip originated with a group of friends who often travel together to fun places, often an island in the Caribbean. BVI had been on our list for a while, and we had a trip planned back in 2020, but the COVID-19 pandemic caused us to cancel it at the last minute. It has taken us some time to get a plan back together, but here we are doing the trip five years later.

When a travel opportunity like this surfaces, I check out the implications of amateur radio licensing for that country. For a US radio amateur (and probably most other countries), getting a radio license for VP2V is easy. The Telecommunications Regulatory Commission (TRC) website has clear instructions on how to apply. Joyce/K0JJW and I filled out a form, provided copies of our passports and FCC licenses, and paid a \$20 license fee. This did require a trip to



Bob Witte K0NR

maintains a great blog site, and offers a book at <https://www.k0nr.com/wordpress/>





a notary public to have these documents notarized. My friend, Paul/KF9EY was on the trip so he also obtained his VP2V license.

Location



Ana Capri is located on the northeast side of BVI, on Tortola Island.

We rented a fantastic house (Ana Capri Estate) on the north side of the island of Tortola. This house has a great view out over the water. Tortola is the main island of the BVI, and international flights are available at the airport on the east end.

The Ham Station



Joyce VP2V/K0JJW is working on a pileup on SSB.

We took along our usual portable ham station, with a few updates. Our Yaesu FT-991 has served us well for POTA, SOTA, and island activations in the past, so it is our go-to radio for this sort of operation. The key features include a 100-watt RF output, a built-in sound card for digital

modes, an internal antenna tuner, and a small enough size. This radio has HF plus 6m, 2m, and 70cm, which can be handy. Add a compact Samlex switching power supply, and we are ready. Recently, we have moved away from using End-fed Halfwave (EFHW) antennas and started using an End-Fed-Random Wire (EFRW), also called an End-Fed Long Wire (EFLW). The difference is subtle but important. The EFRW uses a wire length that is intentionally not resonant on any band, fed by 9:1 UNUN matching device. This setup radiates well over a

range of frequencies but does require an antenna tuner because it is not a consistent 50-ohm impedance on all bands. I've found this to be a reasonable tradeoff between quick-changing band coverage and performance.



The Palomar Engineering Bullet-9 (9:1 UNUN) provides matching at the end of the wire antenna.

For this trip, we used the Palomar Engineers Bullet-9 UNUN, rated for 500 watts PEP. A variety of wire lengths can be used with this approach, with longer wires supporting lower frequencies. The 34-foot wire element supports operating on all bands from 40m to 6m, supported by the SOTABeams Travel Mast. The Travel Mast compacts to just 26.5 inches and extends to 32 feet. Actually, I modified the top of the mast to make it stronger, so the net height is closer to 29 feet. The end-fed wire antenna is almost vertical when deployed in this manner.

In past portable efforts, I've encountered issues with inconsistent antenna match and RF getting back into the FT-991. I checked this out carefully before the trip and adopted some mitigation practices that seem to help. First, I made sure the wire antenna could be supported almost vertically. This is not a strict requirement but it seems to help with getting a good match across all bands. I don't use a counterpoise, but I do have 50 feet of RG-8X coax lying on the ground, which provides a bit of counterpoise. This length of coax also lets me keep the antenna separated from the transceiver by a reasonable distance, reducing the opportunity for RF to get back into the transceiver. Finally, I use a short USB cable, with ferrite cores on both ends, to connect my notebook PC to the FT-



911. In the past, the USB connection between my PC and radio sometimes quit. These precautions appear to have paid off, as the station worked without any issues.

The SOTABeams Travel Mast does a great job supporting the endfed wire antenna.

Operating

We set up the station outdoors under a covered patio to enjoy the fantastic view and (mostly) great weather while operating. This was not optimal, as we did get chased inside a few times when rain squalls moved in. They never lasted long, so I think the tradeoff was worth it.

The propagation on the HF bands has been quite good lately, and we continued to enjoy that while in BVI. We did not have much of an operating plan ("slacker style") but intended to operate on the higher HF bands, mostly 20m and higher, using SSB, FT8, and FT4. Bob/W0BV pointed out that VP2V is somewhat rare, showing up at number 114 on the ClubLog Most Wanted List. Sure enough, whenever we called CQ, we were greeted with a nice pileup.



Paul VP2V/KF9EY working stations on digital (FT8, FT4).

My VP2V/K0NR log has 1030 contacts, including 61 DXCC entities and 23 CQ Zones. I focused mostly on keeping the run rate up and just making contacts. About half of the Qs were with the US. The logs of VP2V/K0JJW and

VP2V/KF9EY are not included in these numbers. I tended to stay on the higher bands as they were working quite well.

As you can see from the numbers right, I made a lot of digital contacts (FT8/FT4). I found FT8 to be slow, and the normal FT8 frequency became crowded. There was much less congestion on FT4, and the run rate was better, so I found that to be effective. I enjoyed the SSB pileups for a while but found it to be a challenge to manage them. While I can work CW, I did not try to manage a pileup on that mode.

Band	Phone	Dig	Total	%
30	0	79	79	8
20	0	46	46	4
17	0	90	90	9
15	0	161	161	16
12	44	349	393	38
10	0	260	260	25
2	1	0	1	0
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Total	45	985	1,030	100

I found a 2m repeater on the island 146.73 MHz (—offset, no tone) and made a few calls on it, but I did not receive a reply.

QSLs will be via Logbook of The World only. I won't be printing cards for this effort but the logs for VP2V/K0NR and VP2V/K0JJW are already loaded into LoTW. Thanks to everyone that worked us!

British Virgin Islands

BVI was a fantastic place to vacation. During our ten days there, we enjoyed the beaches, snorkeling, and sailing excursions. If you are interested in that, there are many online tourism sites to explore.



Bob/K0NR and Joyce/K0JJW are walking one of the many beautiful beaches in BVI.

Thanks for stopping by.

73

~ Bob VP2V/K0NR

KB6NU'S HAM RADIO

How do we encourage more experimentation in amateur radio?

by DAN ROMANCHIK KB6NU



Dan Romanchik KB6NU blogs about amateur radio at KB6NU.com when he's not trying to figure out which way current flows. Dan teaches ham radio classes, and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him at cwgeek@kb6nu.com



In January, I hooked up again with Amateur Radio Digital Communications (ARDC), joining their Grant Evaluation Team (GET). Today at our GET meeting, we heard from ARDC's board president, Bdale Garbee, KB0G, who spoke to us about ARDC's values and mission.

One of those values is encouraging experimentation. Experimentation is part of the fabric of amateur radio. Part 97.1 (b) notes that one of the bases and purposes of amateur radio is the "continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art." Recognizing this, many of ARDC's grants go to groups who are developing amateur radio and digital communications technology.

Many bemoan the fact that there isn't much experimentation going on in amateur radio and that hams don't build their own gear anymore. I'm not so sure that's really true, though. There are lots of ongoing projects that are "advancing the state of the radio art." The M17 Project and FreeDV are two projects that have been funded by ARDC grants. WSJT-X has been around a long time, but the developers are still pushing it forward. Commercially, QRP Labs and HF Signals are both developing interesting hardware and software. And, there are still some QRP clubs, such as the Four State QRP Group (4SQRP), CalQRP, and the Michigan QRP Club that promote home brewing and experimentation.

Perhaps what's needed is something like "Experimenting 101 for Ham Radio Operators." This would be kind of the opposite to what I've been doing lately, that is teaching ham radio to hackers. This would be more along the lines of teaching hacking to ham radio operators.



Along those lines, here are some partly-baked ideas that have come to mind:

- Is it possible to teach people how to become good experimenters? What are some of the characteristics of a good hacker?
- Could we set up some kind of “ecosystem” to promote hacking in ham radio? I envision this ecosystem giving both financial and psychological support to ham radio hackers.
- What do I mean about financial support? Well, inevitably hackers are going to blow things up at some point. Our hacker ecosystem could perhaps help soften the financial losses somehow.
- What do I mean by psychological support? Having a hack go wrong can take a mental toll on a hacker.

Our ecosystem would help the nascent hacker get over the disappointment and discouragement and get on with their hacking. I’m not sure how exactly, but providing some kind of support group would go a long way.

- Parts of this ecosystem may already be in place in the form of makerspaces and public libraries. Maybe I could get an ARDC grant to develop this kind of class to be taught at one of the two makerspaces here in Ann Arbor.

As I say, these are partly-baked thoughts. Please comment if you have any thoughts about this.

~ Dan KB6NU

What CAD software do you use?



On Sunday, I went down to the Ann Arbor District Library to attend their open 3D printing lab. I was kind of amazed. they had at least a dozen 3D printers.

I took with me an STL file that I’d downloaded from Thingiverse for an antenna end insulator. (They call it a dipole wire insulator.) I plugged in my USB drive, and about five minutes later, I had an end insulator. There were a lot of people there who wanted to print things, so they were telling people that they could only print one thing. Since mine was so small, though, they let me print another.

So, now I have to end insulators for my POTA antenna. Pretty cool.

I asked them what program they would suggest that I use to actually design something, and they gave me a link to TinkerCAD. I played

around with TinkerCAD for a bit, and it seems capable enough for simple things. It was pretty simple to learn, but perhaps a bit too simple.

So, I started looking around for other free CAD software. One package I came across was FreeCAD. I downloaded it and played around with it a little. FreeCAD is certainly more full-featured, but a lot more capable, but a lot more complicated as well.

So, I asked my club’s members what they use. Here’s what they had to say:

Alibre

- “That is what I used for the design of the antenna center that I printed for you.”
- “I’ve used Alibre in the past and liked it.”



Autodesk Fusion 360

- “There’s a free version of Autodesk Fusion 360 for personal use. “
- “I think Fusion 360 is probably the most feature rich hobby level software. The value for the company here is that they want to hook you and convince you (or your employer) to start paying for server time to do stuff like generative modeling or CFD. They have tons of paid integration with industry level tools.”

FreeCAD

- “I have worked a bit with an older version of FreeCAD. A rather steep learning curve, with buggy behavior at times, but very powerful and of course, free. I’m curious to see how well the new version 1.0.0 works.”
- “I bounced around through a few apps before I landed on FreeCAD. There’s a few good tutorials on YouTube that help with the operation, and also the thought process behind designing parts.”
- “I found FreeCAD so hard to use I set it down almost immediately.”

Onshape CAD

- “Onshape is my daily driver. The full feature version is free as long as you don’t mind your designs being publicly visible and copy-able. Effectively you are paying for use by adding to their model catalog. Its in browser, so you never have to worry about losing your files.”

OpenSCAD

- “If you want something with a 5-10 minute learning curve, try OpenSCAD.”

TinkerCAD

- “I’ve heard TinkerCAD is great for simple things, but starts lacking when you get to complex geometry.”

As you can see there’s really no consensus. I guess that I’m just going to have to try them all and see which one I like best. What do you guys use?

~ Dan KB6NU

SARC on 24 GHz!



Believed the first in BC

On Jan 22, 2025 at 14:30 pm local time, two members of the Surrey Amateur Radio Communications Society completed what is believed to be the first 24 GHz terrestrial contact in BC.

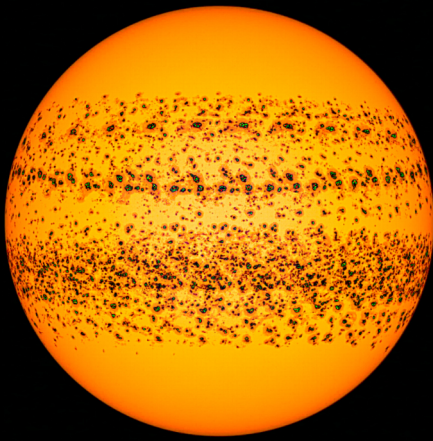
Scott VA7SC was in grid CN89nb at Crescent Beach and Dino VE7NX was in CN89ic at Boundary Bay, approximately 10 km distant. Scott was transmitting just 1 mW using a mixer and local oscillator into a 24" dish with shepherd's crook.

Dino was using a Wavelab module delivering 80 mW output with controller and 12" dish. SSB signals were loud and clear. Antenna orientation was critical, and with a few degrees off-target the signal was gone.

We fully acknowledge and thank Hugh VA3TO and Peter VA3ELE for their assistance in making this a reality.

There’s a video at <https://youtube.com/shorts/PzVmCyqCIJY>

~



Solar Max

Is a second peak coming?

by SPACEWEATHER.COM

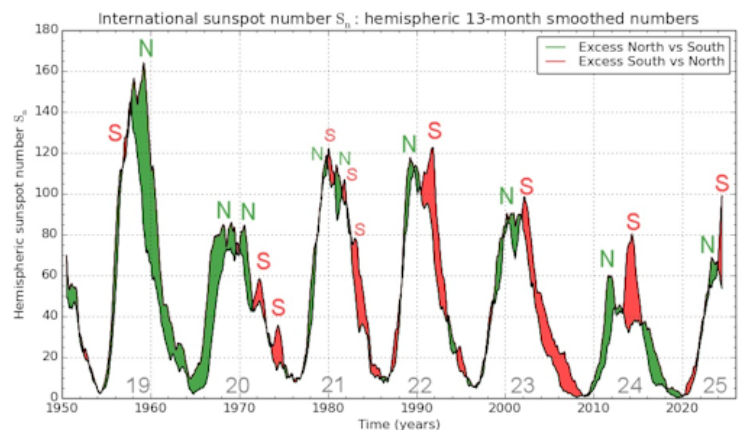
Last October, NOAA and NASA announced that [Solar Max has arrived](#). Only half the sun got the memo. The majority of solar activity has been happening in just one of the sun's hemispheres - the south. The solar superstorm of May 10, 2024, for instance, was caused by a monster southern sunspot.

It makes you wonder, is the other half of Solar Max still coming? This plot of hemispheric sunspot numbers from [SILSO](#) provides some context.

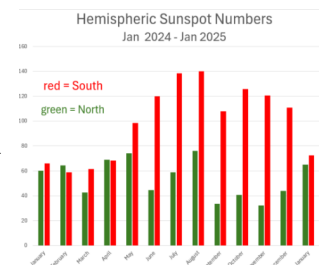
Here we see all seven solar cycles of the Space Age, punctuated by current Solar Cycle 25 on the far right. The most recent cycles are double peaked, with northern sunspots (green) and southern sunspots (red) reaching their own Solar Max ~two years apart. This isn't big news. Researchers have long known that the two hemispheres of the sun are slightly out of sync. The north vs. south delay is called the "[Gnevyshev gap](#)."

The above composite image of last year's sunspots shows how dominant the southern hemisphere has been.

For forecasters of the solar cycle, this raises an interesting possibility: Maybe the northern peak is still coming. Indeed, there are signs in February 2025 that the pendulum is swinging. This month's sunspots have been more evenly distributed between the two hemispheres, a sign that activity may be shifting north.



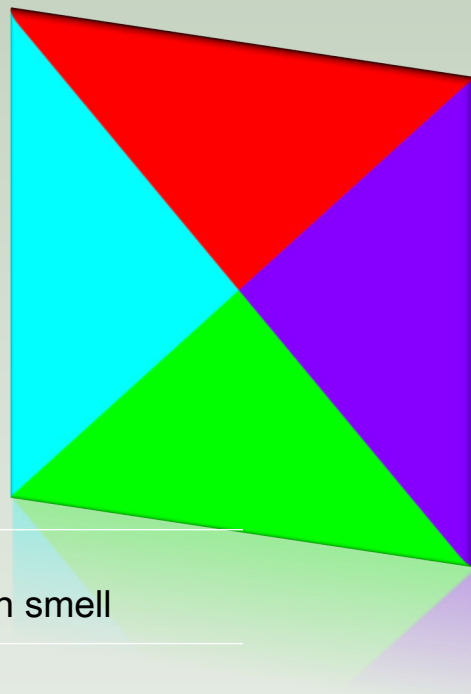
On the other hand, the northern peak might have already occurred. [Take another look at the first plot](#). There is a puny northern peak near the beginning of Solar Cycle 25. Perhaps that was it. (Indeed, that would jibe with the north-first, south-second order of recent double peaks.)



This discussion focuses attention on the north-south balance of sunspots. A northern shift in the months ahead could herald a second peak and another year or two of excellent auroras before Solar Cycle 25 finally peters out. Stay tuned!

~ [spaceweather.com](#)

Foundations of Amateur Radio



Bald Yak, scene 7 -

Building a circuit without burnt chicken smell

by ONNO BENSCHOP VK6FLAB



Podcast

Onno Benschop VK6FLAB

To listen to the podcast, visit the website: <http://podcasts.vk6flab.com/>. You can also use your podcast tool of choice and search for my callsign, VK6FLAB.

Full instructions on how to listen are here: <https://podcasts.vk6flab.com/about/help>

The other day I was sitting on the couch lounging about when I came up with an idea and there and then I picked up a circuit board, soldered down a hundred or so components and built a noise canceling gadget, all within about an hour .. right there, on my couch.

Yeah, that didn't happen, least of all, my soldering skills are not up to scratch, never mind the couch.

I did however build a noise canceling circuit, on my couch, in about an hour, but no soldering iron was hurt and the room didn't smell of chicken afterwards. Instead I used GNU Radio to put together a series of blocks that allow me to apply noise canceling to a signal.

How does this work?

Well, imagine a signal mixed together with the negative version of that signal, think of it as swapping positive and negative if you like. If you mix two identical signals together, one of them inverted, you end up with nothing, because they cancel each other out, where one is high, the other is opposite and low and vice versa. Mix a high signal with a low signal, you end up half-way. If they're the same but opposite, half-way is zero.

Hearing nothing is not helpful, but what if the two signals were slightly different, let's say, one is connected to a proper 10m antenna and the other is connected to an antenna that picks up local noise. We'll call the



antenna on 10m the "signal" and the local noise antenna the "noise". If you mix these together, you end up with a signal and noise combined, but if you invert the noise signal, you can, at least theoretically, filter out the noise that's common to both antennas.

Now I did say "theoretically" and that's because while it sounds simple, it's far from it. Unless you have a special radio, the two signals are not coming from the same device and won't really be identical where it matters. For example, let's call it the volume or gain of one might be higher than the other. One might arrive slightly later than the other if the coax isn't the same length or the electronics in both radios are different. There are other things too, but let's just stay with this for a moment.

You could amplify or attenuate one or both signals to make them the same or similar levels. You could change the phase, think of it as the time when a signal starts, and synchronise the two signals in time manually.

Of course whilst you're doing this, inside GNU Radio, the computer is doing some serious math, which takes time to make these changes, which introduces further delays you'll also need to account for.

Building it was simple. Testing it much less so.

After coming to grips with the USB port on my computer, which for reasons best known to the manufacturer, cough, Apple, switches off ports that are in use, I managed to get two RTL-SDR dongles connected and working.

This involved removing GNU Radio, which was installed using a tool called "homebrew", then installing it instead using "radioconda", twice, since the first time the installer failed with an error, actually three times, because the failed installation left all manner of rubbish behind, so that needed to be removed; then I had to disconnect my keyboard and track pad, because for reasons only known to the manufacturer, yeah, the same one, they won't play nice if there's an RTL-SDR dongle plugged into the USB-C hub, I finally got this running, which in turn involved figuring out what the GNU Radio "Device Arguments" look like for a locally connected dongle, in case you're wondering, it's "rtl=0" for the first one and "rtl=1" for the second.

Clearly this project is living up to its name, Bald Yak.

Now I can invert a signal, I can amplify and attenuate it, change the phase, shift the frequency, swap the I and Q, do a complex conjugate, and have a user interface that can change these settings as required.

I'm going to ignore the hour of my life I'm not getting back to understand how variables, parameters and user interface items hang together and how they interact. It's logical, but it takes a bit to wrap your head around it and I'm a software developer, so I don't envy you if you're not.

Anyway, I tuned to a local FM broadcast radio station and couldn't make any noise go away. I then discovered that my noise antenna was picking up the

All podcast transcripts are collated and edited in an annual volume which you can find by searching for my callsign on your local Amazon store, or visit my author page: <http://amazon.com/author/owh>. Volume 7 is out now.

Feel free to get in touch directly via email: cq@vk6flab.com, follow on twitter: [@vk6flab](https://twitter.com/vk6flab) or check the website for more: <http://vk6flab.com/>

If you'd like to join a weekly net for new and returning amateurs, check out the details at <http://ftroop.vk6flab.com/>, the net runs every week on Saturday, from 00:00 to 01:00 UTC on Echolink, IRLP, AllStar Link, IRN and 2m/70cm FM via various repeaters.

If you'd like to participate in discussion about the podcast or about amateur radio, you can visit the Facebook group: <https://www.facebook.com/groups/foundations.itmaze>

This podcast episode was produced by Onno (VK6FLAB). You can find more at <http://vk6flab.com/>



station just fine, so that didn't help. Then I swapped radios, actually, I just swapped the zero and the one in the "Device Argument" fields and tried again.

In the process I discovered how you can create a so-called "Hierarchical Block" in GNU Radio and to my delight also discovered that there is one that can have a user interface, so I can make a stand-alone block, that has a user interface, that I can use in another project, which is how I intend Bald Yak to function.

So, changing stations, I could finally hear noise, but still no reduction.

Then I realised that I was using FM, not single side band, so I started hunting for an SSB decoder but had to abandon ship to go and do life. Overnight I realised that if everything went to plan, the two FM signals should have canceled each other out, making silence, which they didn't, despite my efforts.

So, at this point I have a thing that can alter noise and mix it with a signal for the purposes of noise reduction. That it doesn't work is potentially because I have not enough range in my adjustments, or too much range with not enough steps, just as likely it's because I'm missing some fundamental understanding somewhere. If you have any documentation I should read, please don't be shy.

As life adventures go, I'm hooked, but it's not without shaving Yaks, Bald or otherwise.

~ I'm Onno VK6FLAB





No-ham Recipes

Toad-in-the-hole

by MARIANNE TREYVELLAN ZR6JMT

How this tasty dish got its name is uncertain... There are no holes, and definitely no toads! One of the earliest written records of this recipe is from the 18th century; this was when toad-in-the-hole became popular in Britain. None of the earliest recipes for toad-in-the-hole lists toads as the meat ingredient, though if times were lean enough, who knows! This recipe serves 4.

- 1 cup (250ml) cake flour
- ¼ teaspoon (1ml) salt
- 1¼ cups (300 ml) milk
- 1¼ cups (300ml) whole grain mustard
- 2 eggs
- 17 ounces (500g) pork or veggie sausages
- Salt and freshly ground black pepper to taste
- ⅛ cup (¼ stick or 30ml) butter

Preheat oven to 400F (200C or a moderately hot oven)

Sift the flour and salt into a mixing bowl. Add the eggs and milk and beat well for a few minutes until it forms a soft batter (add a few drops extra milk if the dough is too thick.) Mix the whole grain mustard into the batter and season with salt and black pepper. Allow to stand for 30 minutes.

Over low heat, fry the sausages in the butter until they are golden brown.

Divide the sausages between 4 to 6 greased, ovenproof dishes and pour the batter over the sausages. Bake for 30 minutes or until golden brown.

Do not open the oven door during the baking time. As soon as you open the oven door, the batter will collapse and take on an unpleasantly dense texture. In other words be patient - it's worth the wait!

Serve the toad-in-the-hole as soon as it comes out the oven. Garnish with fresh herbs and serve with a side salad.

~



Back to Basics

From The Canadian Basic Question Bank

Understanding Ohm's Law



John Schouten VE7TI has been teaching amateur radio courses for over 25 years, and is the Course Coordinator for Surrey Amateur Radio Communications

The Backbone of Electrical Engineering and Amateur Radio

Ohm's Law is one of the foundational principles in the realm of electrical engineering, physics, and particularly in the hobby of amateur radio. Named after Georg Simon Ohm, who first formulated it in the 19th century, this law provides a straightforward yet profound relationship between voltage/Electromotive Force (E), current (I), and resistance (R) in an electrical circuit. Ohm's Law is articulated by the equation $E = I \times R$, where:

- E stands for voltage, measured in volts (V).
- I represents current, measured in amperes (A).
- R is resistance, measured in ohms (Ω).

The ohm (Ω), the SI unit of electrical resistance, is named after him.

Why Ohm's Law is Used

Understanding Circuit Behavior: At its core, Ohm's Law is used to predict how a circuit will behave under different conditions. If you know two variables, you can solve for the third, which is vital for designing, analyzing, and troubleshooting circuits. This law helps in:

- 1. Designing Circuits:** Engineers use Ohm's Law to determine the resistor values needed to achieve desired currents or voltages in a circuit.
- 2. Safety:** Understanding the relationship between current, voltage, and resistance is crucial for ensuring that circuits do not overheat or become hazardous due to excessive current flow.



3. Troubleshooting: When something goes wrong in an electrical system, Ohm's Law can help diagnose issues by checking if components like resistors are functioning within expected parameters.

The Canadian Amateur Radio Basic Question Bank has at least 45 questions on the subject, here are two examples:

B-5-3-7 Which of the following two quantities should be multiplied together to find power?

- A Voltage and inductance
- B Resistance and capacitance
- C Voltage and current
- D Inductance and capacitance

B-5-4-6 Calculate the value of resistance necessary to drop 100 volts with current flow of 0.8 milliamperes:

- A 1250 ohms
- B 1.25 kilohms
- C 125 kilohms
- D 125 ohms

Importance of Ohm's Law

Educational Foundation: For students and hobbyists, Ohm's Law serves as the entry point into understanding electronics. It simplifies complex circuit analysis into a basic formula that can be applied universally, from the simplest to the most complex systems.

Universal Applicability: Despite its simplicity, Ohm's Law applies to a vast array of electrical phenomena, making it indispensable. Whether you're dealing with DC (Direct Current) for a battery-powered device or AC (Alternating Current) in household wiring, Ohm's Law holds true, assuming the materials behave linearly within the operational range.

Scientific and Technological Advancements: The law has been pivotal in the development of electrical technologies. From the early telegraph systems to modern electronics,

understanding how to manipulate voltage, current, and resistance has driven innovation.

Practical Applications in Amateur Radio

Here are just some of the ways Ohm's Law plays a critical role in our hobby:

Impedance Matching: Effective communication requires that the impedance of the antenna matches the impedance of the transmitter. Using Ohm's Law, hams can calculate the necessary resistance (or impedance) to ensure maximum power transfer and minimal reflection back to the transmitter.

SWR (Standing Wave Ratio): Ham operators often adjust antennas to achieve the lowest SWR possible, which involves understanding the resistive and reactive components of the antenna's impedance, directly linked to Ohm's Law principles.

Calculating Load: When using batteries or power supplies, knowing how much current a radio draws under different conditions helps in selecting or building the right power source. This involves using Ohm's Law to ensure the voltage drop across components does not lead to under-performance or damage to the radio equipment.

Component Selection: Choosing resistors or determining if a circuit's components are within tolerance often uses Ohm's Law. For instance, figuring out if a resistor has burned out or if a circuit is drawing too much current.

Modifications: Hams often modify or build their own equipment. Ohm's Law ensures that these modifications maintain safe and effective electrical properties.

Educational Projects: Many amateur radio projects involve building simple circuits to understand radio theory. Ohm's Law is central to these projects, helping newcomers grasp basic but essential concepts of electricity.

Power Management: In scenarios where electricity might be scarce, like during natural disasters, understanding how to efficiently manage power with limited resources is key.

Ohm's Law helps in optimizing battery life and ensuring communication devices run efficiently.

Our sample questions

B-5-3-7 Which of the following two quantities should be multiplied together to find power?

C. Voltage and current

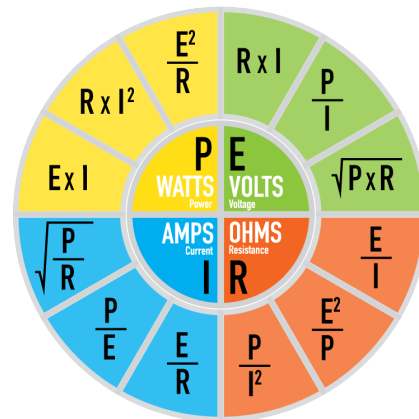
Explanation: Power, expressed in watts = voltage, in volts, TIMES current, in amperes. $P = E \times I$. Watts = volts * amperes. The watt describe how fast electrical energy is used.

B-5-4-6 Calculate the value of resistance necessary to drop 100 volts with current flow of 0.8 milliamperes:

C. 125 kilohms

Explanation: Ohm's Law ($I = E / R$) becomes $R = E / I$ when solving for R. Resistance is voltage divided by current. Ohms = volts / amperes. 100 volts / 0.0008 amperes = 125 000 ohms = 125 kilohms. [Note that volts divided by milliamperes is kilohm]

Ohm's Law, while simple, is incredibly powerful in its application across electrical engineering and amateur radio. It not only aids in the



practical aspects of circuit design and troubleshooting but also fosters a deeper understanding of how electrical components interact. For amateur radio enthusiasts, this law is not just a theoretical concept but a tool they use daily to enhance performance, innovate, and maintain the integrity of their communication systems.

Whether you're calculating the resistance needed for a new antenna or ensuring your emergency radio setup won't drain its battery prematurely, Ohm's Law remains a fundamental guide in the exciting world of electronics and radio communication.

~ John VE7TI



**Radio Amateurs
of
du Canada**

Special Introductory RAC Membership Opportunity for New Amateurs

Message from the RAC President

Congratulations again on achieving your Certificate of Proficiency in Amateur Radio and welcome to Radio Amateurs of Canada! In recognition of your achievement, I'd like to offer you a free one-year membership which includes:

A subscription to the digital (eTCA) version of The Canadian Amateur magazine, with access to previous online issue. Opportunities to connect with local Amateurs through the RAC Affiliated Club Program which includes liability insurance for your personal Amateur Radio activities. Access to annual RAC Contests, Special Events and Operating Awards. Opportunities and discounts from various partner organizations. Full member rights including participating in the decision making at RAC Annual General Meetings and in the election of RAC representatives. There are many great reasons to join RAC and I hope you will take advantage of this special offer by completing the introductory membership form provided below.

If you need any additional information please don't hesitate to contact me by email at president@rac.ca or by contacting the RAC Office at racgm@rac.ca.

– 73 (Best Wishes) and welcome!

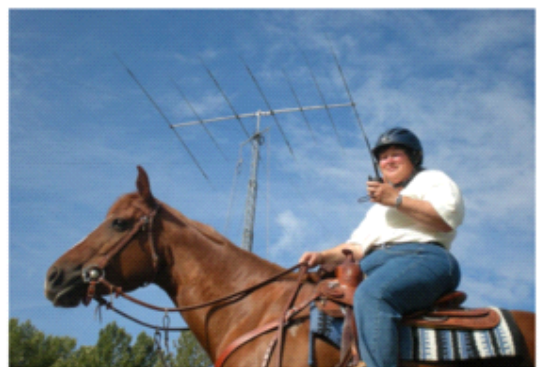
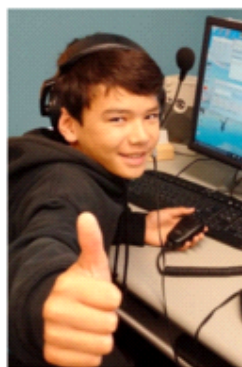
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- Enhance your personal and your community's preparedness in an emergency
- Use a radio, computer, smartphone or tablet for free worldwide voice and digital communications
- Practice an exciting hobby or start a career opportunity



This is our last course before the new question bank takes effect!



March 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
		Event details: SARC–SEPAR ‘Live’ calendar link All contest information: WA7BNM Contest Calendar: Home				Coffee: 0700 Denny's King George Blvd. & 68 Avenue OTC Open 0930 Contest: ARRL International DX Contest (SSB)
2	3	4	5	6	7	8
1897: Marconi granted first wireless patent Contest: ARRL International DX Contest (SSB)		1930 SEPAR Net 2000 SARC Net 1910: DeForest experimental radio broadcast from NY	1927: Federal Radio Commission holds first meeting		1876: Bell receives U.S. patent for telephone	Coffee: 0700 OTC Open 0930 Contest: Commonwealth (BERU) Contest CW
9	10	11	12	13	14	15
Contest: Commonwealth (BERU) Contest CW	1876: Bell successfully transmits by telephone	1930 SEPAR Net 2000 SARC Net	SARC Meeting 1900-2100			Coffee: 0700 OTC Open 0930 Contest: BARTG RTTY Contest
16	17	18	19	20-	21	22
Contest: BARTG RTTY Contest		1930 SEPAR Net 2000 SARC Net		1902: Nathan Stubblefield demonstrates ship-to- shore broadcast to multiple receivers in Washington, DC		Coffee: 0700 OTC Open 0930 Contest: Africa All Mode International DX Contest Burnaby ARC Swap Meet
23/30	24/31	25	26	27	28	29
(23) Contest: Africa All Mode International DX Contest (30) Contest: CQ WW WPX Contest SSB		1930 SEPAR Net 2000 SARC Net	SARC Directors Meeting 1900-2100	1899: Marconi transmits across English Channel		Contest: CQ WW WPX Contest SSB



April 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
	Event details: SARC—SEPAR 'Live' calendar link All contest information: WA7BNM Contest Calendar: Home					Coffee: 0700 Denny's King George Blvd. & 68 Avenue OTC Open 0930
6	7	8	9	10	11	12
1875: Bell granted patent for telegraph	Basic Course 19-21:00	1930 SEPAR Net 2000 SARC Net	SARC Meeting 1900-2100			Coffee: 0700 OTC Open 0930
13	14	15	16	17	18	19
Contest: ARRL Rookie Roundup SSB	Basic Course 19-21:00	1930 SEPAR Net 2000 SARC Net			Good Friday WORLD AMATEUR RADIO DAY	Coffee: 0700 OTC Open 0930 Contest: CQMM DX Contest CW 1928: Harry Nyquist publishes Nyquist Sampling Theorem
20	21	22	23	24	25	26
Easter Sunday Contest: CQMM DX Contest CW	Basic Course 19-21:00	1930 SEPAR Net 2000 SARC Net	SARC Directors Meeting 1900-2100		MANNA 80 Special Event 1874: Guglielmo Marconi born	Coffee: 0700 OTC Open 0930 MANNA 80 Special Event
27	28	29	30			
MANNA 80 Special Event 1791 Samuel Morse born	Basic Course 19-21:00	Basic Course Exam 19-21:00 1930 SEPAR Net 2000 SARC Net				

Radio-Active

Profiles of SARC members

Meet Adrian Mashhadi VA7YEP / VE7TTI

coordinated by BLAKE WIGGS VA7BWG



Adrian VA7YEP

Participants in the weekly SEPAR net conducted on Tuesday, August 27, 2024 found it bittersweet: NCO Adrian Mashhadi VA7YEP / VE7TTI conducted the net for the final time before moving on to the next exciting phase of his life—law school.

As a youngster, Adrian's interest in radio was stimulated by his father's shortwave receiver. Adrian enjoyed listening to it and trying to pick up signals—an amateur radio operator in the making well before he became aware of the hobby.

Once involved with the hobby, Adrian immersed himself in the emergency preparedness aspect, volunteering alongside other SARC / SEPAR members in support of public events such as marathons and parades. Adrian's NCO role evolved from there and his voice became very familiar to amateur radio operators throughout the Lower Mainland, particularly via the SEPAR weekly net.

Rather than just sit back and operate from the relative comfort of a shack, Adrian often simulates actual emergency conditions in his SEPAR NCO role by operating POTA-style with his Arrow antenna. He observes that it can be challenging to manage the physical operation of the radio while making a call log from a portable location, in comparison to the ease of sitting at a desk where the only interaction with the radio is the hand mic. He encourages anyone interested in net control to try the NCO role in portable fashion for a different experience that will enhance one's appreciation for the importance of amateur radio operators in emergency situations.

The ARISS Slow Scan TV (SSTV) events conducted from the International Space Station (ISS) in 2021 piqued Adrian's interest in satellite work. FM birds are his current area of satellite interest. He wowed observers at the OTC with a satellite contact setup utilizing only his inexpensive Arrow portable antenna and a pair of HTs. As recently as October 2024 he made contact with Jim WD5GRW in Texas on UVSQ-Sat—his first contact on that



satellite—a low altitude (300km) French CubeSat. Adrian plans to get into linear satellites to take advantage of their additional modes, e.g. SSB & CW and their increased bandwidth capabilities which facilitate multiple simultaneous contacts by ground operators. He has worked linear satellites via the SARC OTC satellite station, but has yet to do so personally.

In law school at the University of Windsor, Adrian is gearing up for his first moot—a debate-like exercise in which opposing teams of law students present arguments overseen by “judges”, volunteers who may be sitting judges or experienced lawyers. Adrian has a special interest in Canadian constitutional law, so he’s relishing his moot topic. It

focuses on section 8 of the Canadian Charter of Rights and Freedoms which holds that everyone has the right to be secure against unreasonable search or seizure. Seems simple enough, right? Well, suppose police officers responding to an emergency assault situation enter a private residence fearful for the victim’s safety, discover illicit drugs in plain view and charge the alleged assailant with possession of a controlled substance for the purpose of trafficking. Does that charge violate section 8? The Supreme Court of Canada recently had to contend with the issue (see *R. v. Stairs*, 2022 SCC 11) and legal

scholars are still debating the outcome, so Adrian and his fellow students have plenty to grapple with on both sides of the issue in their upcoming moot.

Adrian has been quick to respond to SARC’s calls for volunteers and he’s continuing that spirit in Windsor: volunteering with his law school’s community legal aid program which

provides certain types of legal assistance to low-income community residents.

Adrian is finding the law school environment surprisingly friendly, albeit competitive. It’s early days yet, but after graduating he hopes to practice in the field of constitutional law, doing courtroom work as a barrister. That will leverage

another of his areas of legal interest—criminal law—since criminal cases can often involve difficult constitutional issues—as noted above.

Apart from his legal studies, Adrian gets together with his friends/fellow students to play pool. He also reports that he is “part of the poker club and we have poker events every so often (no money of course)”. He recently re-assembled his Arrow antenna and intends to try working some satellite passes.

Let’s hope that Adrian stays rooted locally and finds time to continue indulging his interest in amateur radio. We had a taste of that on New Year’s Eve when Adrian reprised his role as SEPAR NCO during a holiday break from his studies.

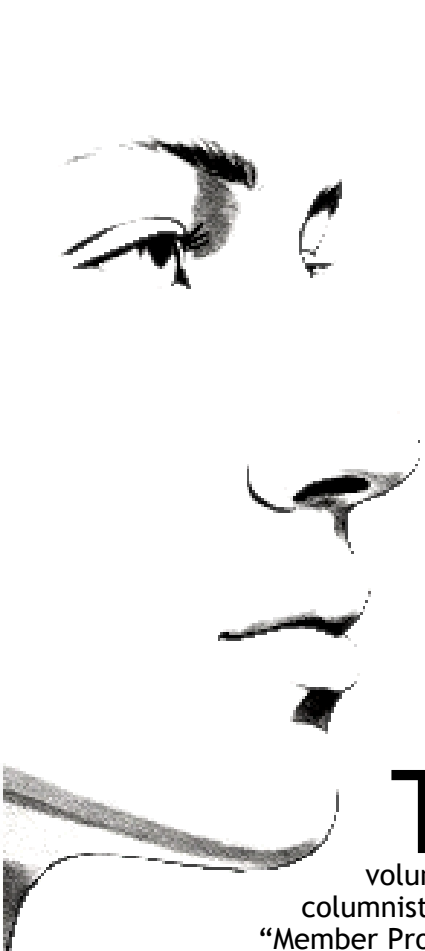
~ Blake VA7BWG



Adrian instructs Larry VA7LXB on the finer points of making satellite contacts



Adrian provided a satellite talk and demonstration at our 2024 summer school RF Communications course for Surrey high school students.



Historical Profiles of SARC members

Links to past profiles

by BLAKE WIGGS VA7BWG

The January 22, 2025 SARC Bulletin included a "Creative Assistance Needed" call for volunteers--something to do with a columnist to coordinate the bi-monthly "Member Profile" for the Radio-Active column of The Communicator.

As an amateur radio newbie, I thought "Finally! Something simple that I might actually be able to do". I cobbled together a few samples of some stuff I've written and submitted them, thinking that John Schouten would be swamped with volunteer applications. Apparently he wasn't—to my surprise, John asked me to get started right away. Knowing nothing about the role, I decided to read a few Member Profiles in past issues of The Communicator. That led me to more and more and more Member Profiles. In an effort to grasp the scope of the role I compiled an index of previously published Member Profiles, which you'll find below. Click any hyperlink in the right column to open the referenced Member Profile in your browser.

Disregarding a few early profiles of non-SARC/SEPAR members, the Member Profile column originated in early 2011. Specifically, in his February 9, 2011 Meeting Minutes column, Gord Kirk said "We are looking for a creative writer to create member profiles for the Communicator. Susan [Eshelman] VE7IIE has volunteered to do this." Susan's first profile—of Alan Saunders VA7BIT—appeared in the

March 2011 issue of The Communicator with her subsequent columns appearing up to and including the June 2012 issue profiling Kapila Jayaweera VE7KGK.

Following a hiatus of several months, Jinty Reid VA7JMR took over the role, with her initial column featuring Norman Schmidt VE7IIT in the October 2012 issue. Jinty handled the Member Profile column for almost four years, culminating with her profile of Bhim Sen Nair VA7BIM in the June 2016 issue.

Geoff Higginson VA7HIG became the Member Profile columnist as of September 2016, with his inaugural column profiling father and son Larry and Cam Soo, VA7SOO / VA7ROI. Geoff's columns continued until the November 2017 issue profiling Bruce Elrick VA7CBE. John Brodie VA7XB took on the role in the December 2017 issue with a profile of Michael Birtles VE7GMP. John's Member Profiles continued through 2022, interspersed with a few columns contributed by Robert Fishwick VA7FMR, Susan Eshelman VE7IIE and John Schouten VE7TI, plus a few self-authored profiles. Larry Bloom VE7LXB took over with a profile of himself in the May - June 2023 issue. Larry's columns continued until his profile of Jeanne Wilson VA7QD which appeared in the January - February 2025 issue. My role commences with the March - April 2025 issue and a profile of Adrian Mashhadi VA7YEP / VE7TTI.

~ Blake VA7BWG

Name & Call Sign(s)

Click on the URL

Adrian Mashhadi (VA7YEP)	https://archive.org/details/SARC_Communicator_2025-03/page/94/
Jeanne Wilson (VA7QD)	https://archive.org/details/SARC_Communicator_2025-01/page/88/
Andrew Elgin (VE7LGN)	https://archive.org/details/SARC_Communicator_2024-11/page/104/
Adam Drake (VE7ZAL)	https://archive.org/details/SARC_Communicator_2024-09/page/106/
Katrina Reynolds (VA7WBT)	https://archive.org/details/SARC_Communicator_2024-03/page/96/
Lesley Verhulst (VE7CMI)	https://archive.org/details/sarc-communicator-2024-01/page/96/
Dmitry Sevostiyarov (VA7DVO)	https://archive.org/details/sarc-communicator-2023-11/page/106/
Leandro Silva (VE7LSI)	https://archive.org/details/sarc-communicator-2023-09/page/110/
Doug Jeffery (VA7JDJ)	https://archive.org/details/sarc-communicator-2023-07/page/94/
Larry Bloom (VE7LXB)	https://archive.org/details/sarc-communicator-2023-05/page/108/
Erika Perea Natarajan (VA7ISI)	https://archive.org/details/sarc-communicator-2023-03/page/107/
Jim Smith (VE7FO)	https://archive.org/details/sarc-communicator-2023-01/page/85/
Horace Bong (VA7HXB)	https://archive.org/details/SARC_Communicator_2022-11/page/87/
Thomas Willms (VE7TXL)	https://archive.org/details/SARC_Communicator_2022-09/page/121/
Dino Gueorguiev (VE7NX)	https://archive.org/details/SARC_Communicator_2022-07/page/103/
John Hummell-Newell (VE5JHN)	https://archive.org/details/SARC_Communicator_2022-05/page/109/
Andrew Elgin (VA7LGN)	https://archive.org/details/SARC_Communicator_2022-03/page/107/
Thomas Abbott (VE7TOA)	https://archive.org/details/SARC_Communicator_2022-01/page/97/
Gord Kirk (VA7GK)	https://archive.org/details/SARC_Communicator_2021-11/page/93/
Fred Orsetti (VE7IO)	https://archive.org/details/SARC_Communicator_2021-09/page/91/
Cristian Antonescu (VA7CTK)	https://archive.org/details/SARC_Communicator_2021-07/page/89/
John Meneghello (VA7VGC)	https://archive.org/details/SARC_Communicator_2021-05/page/88/
John Vander Est (VE7QU)	https://archive.org/details/SARC_Communicator_2021-03/page/96/
Gary Peare (VE7GPR)	https://archive.org/details/SARC_Communicator_2021-01/page/90/
John Schouten (VE7TI)	https://archive.org/details/SARC_Communicator_2020-11/page/90/
Reg Natarajan (VE7ZEB)	https://archive.org/details/SARC_Communicator_2020-09_AGM/page/92/
Vlad Koval (VA7LKO)	https://archive.org/details/SARC_Communicator_2020-07/page/80/
Frank Kowalishyn (VE7KKV)	https://archive.org/details/SARC_Communicator_2020-05/page/66/
Ion Marinescu (VE7NL)	https://archive.org/details/SARC_Communicator_2020-03/page/54/
Jean-Luc Marinescu (VA7JLU)	https://archive.org/details/SARC_Communicator_2020-03/page/54/
Barry Nugent (ZS2Nf)	https://archive.org/details/SARC_Communicator_2020-01/page/32/
Paul Andreassen (VE7NUD)	https://archive.org/details/SARC_Communicator_2019-04/page/21/
Les Tocko (VA7OM)	https://archive.org/details/SARC_Communicator_2019-03/page/22/
Kevin McQuiggin (VE7ZD)	https://archive.org/details/SARC_Communicator_2019-01/page/18/
Chris Cowx (VA7CWX)	https://archive.org/details/SARC_Communicator_2018-12/page/20/
Don Dangelmeier (VA7AB)	https://archive.org/details/SARC_Communicator_2018-11/page/24/
Nell Wrotniak (VA7PE)	https://archive.org/details/SARC_Communicator_2018-10/page/20/
Brett Garrett (VE7GM)	https://archive.org/details/SARC_Communicator_2018-09/page/30/
John Brodie (VA7XB)	https://archive.org/details/SARC_Communicator_2018-06/page/22/

Name & Call Sign(s)

Click on the URL

Dixie Mogg (VA7DIX)	https://archive.org/details/SARC_Communicator_2018-05/page/24/
Jason Biggin (VA7ITJ)	https://archive.org/details/SARC_Communicator_2018-04/page/22/
Roland Klann (VE7RGK)	https://archive.org/details/SARC_Communicator_2018-03/page/20/
Art Witmans (VE7WAE)	https://archive.org/details/SARC_Communicator_2018-01/page/16/
Michael Birtles (VE7GMP)	https://archive.org/details/SARC_Communicator_2017-12/page/10/
Bruce Elrick (VA7CBE)	https://archive.org/details/SARC_Communicator_2017-11/page/20/
Slawa Lisitt (VE7LWW)	https://archive.org/details/SARC_Communicator_2017-10/page/34/
Paul Piovesan (VA7PIO)	https://archive.org/details/SARC_Communicator_2017-09/page/32/
Robert Fishwick (VA7FMR)	https://archive.org/details/SARC_Communicator_2017-06/page/32/
Marvin Hunt	https://archive.org/details/SARC_Communicator_2017-05/page/10/
Bill Dick (VE7IKX)	https://archive.org/details/SARC_Communicator_2017-04/page/10/
Cliff Hine (VE7FD)	https://archive.org/details/SARC_Communicator_2016-12/page/16/
Andrew Gunson (VEOMIA)	https://archive.org/details/SARC_Communicator_2016-11/page/16/
Steve McLean (VE7SXM)	https://archive.org/details/SARC_Communicator_2016-10/page/21/
Larry Soo (VA7SOO)	https://archive.org/details/SARC_Communicator_2016-09/page/7/
Cameron Soo (VA7ROI)	https://archive.org/details/SARC_Communicator_2016-09/page/7/
Bhim Sen Nair (VA7BIM)	https://archive.org/details/SARC_Communicator_2016-06/page/10/
Craig Winchar (VA7CLW)	https://archive.org/details/SARC_Communicator_2016-05/page/10/
Dixie Mogg (VA7DIX)	https://archive.org/details/SARC_Communicator_2016-04/page/8/
Howard Ticzon (VA7HTZ)	https://archive.org/details/SARC_Communicator_2016-03/page/20/
Mike Zavarukhin (VE7ACN)	https://archive.org/details/SARC_Communicator_2016-02/page/10/
Fred Reichstein (VE7MPI)	https://archive.org/details/SARC_Communicator_2016-01/page/16/
Drew Elvins (VE7DRW)	https://archive.org/details/SARC_Communicator_2015-12/page/10/
Heinz Buhrig (VE7AQ)	https://archive.org/details/SARC_Communicator_2015-11/page/10/
Al Munnik (VE7RMP / VA7MP)	https://archive.org/details/SARC_Communicator_2015-10/page/18/
Howard Brydle (VE7HKB)	https://archive.org/details/SARC_Communicator_2015-09/page/20/
Kathy Plant (VE7KTL)	https://archive.org/details/SARC_Communicator_2015-06/page/18/
Mike Plant (VE7AT)	https://archive.org/details/SARC_Communicator_2015-05/page/22/
Nicole Stopa (VE7PET)	https://archive.org/details/SARC_Communicator_2015-04/page/18/
Arthur Siemens (VE7SIE)	https://archive.org/details/SARC_Communicator_2015-03/page/18/
Stan Williams (VA7NF)	https://archive.org/details/SARC_Communicator_2015-02/page/20/
Al Peterson (VA7ALZ)	https://archive.org/details/SARC_Communicator_2015-01/page/18/
Sheldon Ward (VA7XNL)	https://archive.org/details/SARC_Communicator_2014-12/page/18/
Geoff Higginson (VA7HIG)	https://archive.org/details/SARC_Communicator_2014-11/page/16/
Rick Law (VE7GMO)	https://archive.org/details/SARC_Communicator_2014-10/page/18/
Joe Zaccaria (VE7TOL)	https://archive.org/details/SARC_Communicator_2014-09/page/16/
Jeremy Morse (VE7TMY)	https://archive.org/details/SARC_Communicator_2014-06/page/n7/
Bill Gipps (VE7XS)	https://archive.org/details/SARC_Communicator_2014-05/page/16/
Alex Danese (IZ7FMM / VE7ADA)	https://archive.org/details/SARC_Communicator_2014-04/page/n9/

Name & Call Sign(s)

Click on the URL

Ken Clarke (VE7BC)	https://archive.org/details/SARC_Communicator_2014-03/page/n9/
Bob Buckland (VE7FWZ)	https://archive.org/details/SARC_Communicator_2014-02/page/n9/
Dennis Jackson (VE7DGJ)	https://archive.org/details/SARC_Communicator_2014-01/page/n9/
Scott Hawrelak (VE7HA)	https://archive.org/details/SARC_Communicator_2013-12/page/n9/
Ralph Wrotniak (VA7UB / VA7CNR)	https://archive.org/details/SARC_Communicator_2013-11/page/n3/
Elizabeth Gilchrist (VA7ELA)	https://archive.org/details/SARC_Communicator_2013-10/page/n5/
Kjeld Frederiksen (VE7GP)	https://archive.org/details/SARC_Communicator_2013-09/page/n5/
Nell Wrotniak (VA7NEW / VA7PE)	https://archive.org/details/SARC_Communicator_2013-06/page/n5/
Nelson Eisel (VE7NAE)	https://archive.org/details/SARC_Communicator_2013-05/page/n5/
Garvin Yee (VA7YEE)	https://archive.org/details/SARC_Communicator_2013-04/page/n3/
John MacFarlane (VE7AXU)	https://archive.org/details/SARC_Communicator_2013-03/page/n3/
Peter Gauld (VE7PGX)	https://archive.org/details/SARC_Communicator_2013-02/page/n3/
Anton James (VE7SSD)	https://archive.org/details/SARC_Communicator_2013-01/page/n3/
Fred Orsetti (VE7IO)	https://archive.org/details/SARC_Communicator_2012-12/page/n7/
Robert Gilchrist (VE7CZV)	https://archive.org/details/SARC_Communicator_2012-11/page/n9/
Norman Schmidt (VE7IIT)	https://archive.org/details/SARC_Communicator_2012-10/page/n11/
Kapila Jayaweera (VE7KGK)	https://archive.org/details/SARC_Communicator_2012-06/page/n14/
Jim Smith (VE7FO)	https://archive.org/details/SARC_Communicator_2012-04/page/n9/
Brett Garrett (VE7GM)	https://archive.org/details/SARC_Communicator_2012-03/page/n7/
Bill Gipps (VE7XS)	https://archive.org/details/SARC_Communicator_2012-02/page/n6/
Kelvin Hall (VA7KPH)	https://archive.org/details/SARC_Communicator_2011-12/page/n3/
Jinty Reid (VA7JMR)	https://archive.org/details/SARC_Communicator_2011-11/page/n3/
John Brodie (VA7XB)	https://archive.org/details/SARC_Communicator_2011-10/page/n3/
Susan Eshelman (VE7IIE)	https://archive.org/details/SARC_Communicator_2011-09/page/n3/
George Merchant (VE7QH)	https://archive.org/details/SARC_Communicator_2011-07/page/n3/
Keith Stebbings (KE1THR)	https://archive.org/details/SARC_Communicator_2011-06/page/n7/
John Schouten (VE7TI)	https://archive.org/details/SARC_Communicator_2011-05/page/n3/
Alan Saunders (VA7BIT)	https://archive.org/details/SARC_Communicator_2011-03/page/n12/
Joe Walsh (WB6ACU)	https://archive.org/details/SARC_Communicator_2011-02/page/n5/
Diana Eng (KC2UHB)	https://archive.org/details/SARC_Communicator_2011-01/page/6/
Lloyd Hargrove (VE7JLH)	https://archive.org/details/SARC_Communicator_2010-11/page/9/

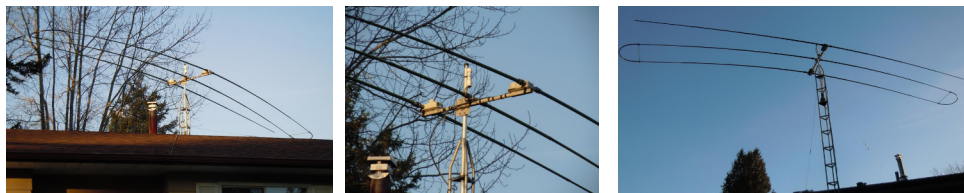
As you can see from the very long list above, "Radio-Active" has been a long-running part of The Communicator since I started as editor many years ago. Blake has done an incredible job and he has only just started. Thank you for taking this on, and we look forward to your future articles.

John VE7TI
Editor



FOR SALE

2 element (30 to 10 meters) SteppIR beam. Comes with both the control cable and control box, with low loss coaxial cable. Has an aircraft connector with gold plated contacts to connect the cable to the motors. Easy disconnect/reconnect. Must be able to collect and transport. Would like to keep the boom and motors assembly together. You might not be able to collapse the fiberglass sweeps (buyer might consider getting new ones from Fluidmotion). The antenna is still 'up, but I hope to take it down shortly.



If interested, please contact the undersigned. Asking C\$900

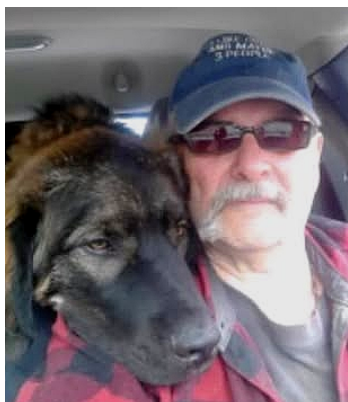
...and free!

Do you like puzzles? Have a Mosley TA33jr that is hanging up in my garage and I need to get rid of it. I have modified the boom to fit the storage (cut it and put support and bolts). Have the flyer for the antenna which gives dimensions. You may need to replace some of the tubing, but it is more or less all there. Must be able to come by and pick up.

If you're interested, contact the undersigned

Ralph Webb VE7OM
VE7OM@myrac.ca

Bryan VE7JYD and Bear



Bryan completed our on-line course several years ago. He lives in Northern BC so remote access to a course was of primary importance. Despite some connection issues, due to low bandwidth at his location, Bryan not only passed with Honours, but also completed his CW endorsement and has been active on the bands ever since.



Winter Field Day

by ANDREW ELGIN VA7LGN

Winter Field Day, much like Field Day in June, is an annual amateur radio event taking place in the last full weekend of January. Amateurs brave winter conditions to set up field operations at parks, peaks, and even at home, and attempt to make contact with other participating stations worldwide. Winter Field Day poses an excellent opportunity to practice emergency communications procedures in a challenging environment.

This year SARC fielded a small team of amateurs consisting of Paul VE7VP, Karl (VA7QCK, Barbara VA7FDP and Elaine VA7BVC and myself, Andrew VA7LGN. We arrived and set up our equipment at Derby Reach Regional Park on the banks of the Fraser River in North Langley. It was a crisp -5 C with the sun just cresting the horizon, and the park was completely empty when Paul and I arrived at 7:00 AM. We chose 3 of the off season camp sites and began setting up.

Having had a year or so to build up our equipment and experience, Paul and I came much more prepared than our last WFD 2 years ago. We both had pop up shelters, stoves,

antennas and radios well suited for portable operation. We also both had full battery power with Paul also bringing his newly built power box to try out. I chose to set up 2 antennas, a Wolf River Coils Otophone dipole (a coil tuned V configuration) and the “SARC Special” linked dipole which I put up on 25 foot fiberglass mast. Paul decided to run Multiband Vertical - a Mosley RV-8C assembled on site and secured with no small difficulty owing to the completely frozen ground!

Karl and Barbara (and Elaine later) arrived shortly after with their self built camper in tow, ready for the first shakeout of the year. They brought with them an 80m dipole with a sectional 30 ft fiberglass mast, as well as a mag mount 10m antenna. This was technically Karl and Barbara’s second “field day” event as they had successfully passed their basic exams the very day of Field Day 2024.

We also brought with us a variety of radios - myself choosing to operate a Yaesu FT-891, Paul a Yaesu FT-DX10, and Karl, Barb, and Elaine running an Icom IC-746. Equipment for the day performing flawlessly, antennas matched, batteries humming with one



Paul VE7VP

Andrew VA7LGN

Elaine VA7BVC
Karl VA7QCK &
Barb VA7FDP



This site on the south shore of the Fraser River is also a popular POTA location. In summer it is a very popular and always busy campground given its proximity to Vancouver.

exception. My foot switch decided to call it quits about half way through the day, but we were able to complete some expedient field repairs with the whopping 300AH battery and solar that was included with Karl and Barbara's trailer!

Band conditions were favorable for the day. We operated on 80, and 40 with minimal success but 20, 15, and 10m proved much more successful. We had contacts all over North America including California, Alaska, Texas, South Carolina, Florida, and Rhode Island. Paul even had a DX contact in Italy on 20m. We weren't aiming for record contact numbers and spent a fair amount of time enjoying the company and the beautiful weather. Despite that we still managed to get 64 contacts, and Barbara and Elaine were also able to activate Derby Reach for Parks On The Air.

We had a few visitors throughout the day, including a number of Hams, my family, and a former rock 101 co-host. We also had Grace VA7LZT, one of the students from the Summer Ham Radio course come out and work her first contest. The beautiful but chilly weather lasted all day (and no sudden wind gusts to carry away easy ups) but at 4:00PM it was time to pack up before the park closed. It was another successful field event for SARC!

~ Andrew VA7LGN

More photos /over

WINTER FIELD DAY



John VE7TI and Grace VA7LZT



Karl VA7QCK and Barbara VA7FDP



The Contest Contender



BC QSO Party

Not quite as successful as 2024, but a good effort

by JOHN BRODIE VA7XB



JOHN BRODIE
VA7XB reporting on
SARC's contesting
efforts.

The BC QSO Party held this year on Feb. 1-2 is one of our more popular contests because it is sponsored locally, and BC stations are sought after for bonus points. Despite the snowy weather which kept people off the roads, we had another good turnout with 3 CW operators and 10 SSB operators showing the VE7SAR flag. The number of contacts at 1583 and claimed score of 1,494,996 did not quite beat last year's score. Running two stations at high power, we experienced significant inter-station interference on 40 and 80 m which required power reductions, but operation on 10, 15 and 20 m was relatively trouble-free. Here are the statistics, photos next page.

~ John VA7XB

Band	Mode	QSOs	Pts
3.5	LSB	1	2
7	CW	4	16
7	LSB	61	122
14	CW	271	1084
14	USB	276	548
21	CW	231	924
21	USB	323	646
28	CW	67	268
28	USB	349	698
Total	Both	1583	4308

M/2 HP	Score	QSO	Count/DXCC/ST/Prov	Last	
1	VE7SAR 1,494,996	1,583	347	02:16	Surrey Amateur Radio Communications
M/S HP	Score	QSO	Count/DXCC/ST/Prov	Last	
1	VE7IO 743,188	998	274	02:12	Orca DX and Contest Club
SO-ALL	Score	QSO	Count/DXCC/ST/Prov	Last	
1	VE7BC 827,360	1,502	270	02:22	Orca DX and Contest Club
2	K0TRL 17,372	77	68	02:16	Kansas City Contest Club
3	N6AR 15,620	78	62	02:17	Florida Contest Group
4	W3US 8,970	56	45	02:16	Florida Contest Group



The BC QP testers

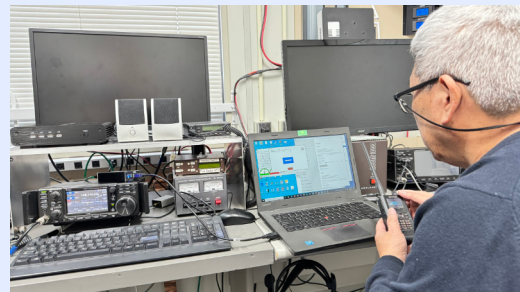


And while some of us were contesting,

other activities, typical of a Saturday morning at the OTC, were happening as well.



Above, Steve and Horace work on the iCOM DIN plug for the Winlink station, and Horace tests the results.



Below, while Stan looks on, Andrew and Karl test a true roll-up antenna made of conductive Faraday fabric on a cloth backing, Below right, Doug and Mike rebuilding a donated 3D printer.



January
2025



SARC General Meeting minutes

January 8, 2025

Recording Secretary MIKE PORISKYVA7YEG

SARC General Meeting Minutes 25.01.08

Attendance: Approximately 22 members participated in the online Zoom meeting

Start Time: 19:00 hrs

Location: Zoom online

Welcome & Presentation of Agenda: Steve called the meeting to order and gave a brief welcome message and introduction. Attendees were informed that tonight's meeting will include a brainstorming session and allow them to share ideas that they would like to see in the new year.

Business Meeting

1. Announcements

- Adam Drake is still looking for handheld radios that his summer school students could use. Reg advised that in the future, Adam will be looking for funds to purchase identical radios for all students. The decision was made to obtain funds rather than collect used radios so that all students could share their experiences with the same radio.

- Horace has offered to coach members on setting up their radios to connect with a WinLink gateway. Anyone interested should contact Horace directly.
- Dino has also offered to coach members using the Satellite communication radio. Contact Dino to schedule a Saturday morning session.
- An email bulletin is sent out every second Wednesday to all members which lists the club's upcoming activities. Contact John Brodie if you are not on the list.
- Reminder that everyone is invited to SARC's Saturday breakfast at Denny's (6850 King George Blvd) - 7 to 9 am, followed by a visit to the OTC.

2. Committee Reports:

Financial Report - Scott H.

- Profit & Loss financial report was displayed. The GIC will become due in January and will be re-invested following input from the Directors.

Nets - Reg N

- All nets are operating well.



- The GOTA net has been suspended due to minimal use by new Hams. The net will be scheduled as needed when each course finishes.
- Reg advised the members that Adam Drake is looking into offering a regular class covering amateur radio. This could produce another 30 graduates a year and possibly reaching critical mass to justify either the GOTA net or a net dedicated to the students.
- The 220 MHz (1.25 M Band) net has been a success and Reg is considering the addition of similar nets for UHF and Wires X.

Membership - John B.

- SARC currently has 142 paid members and is growing at 1 or 2 per month.

Contests - John B.

- John reviewed the purpose of participating in contests, emphasizing that winning is not the goal and there are many benefits such as team effort, confidence building exercise, emergency preparedness, equipment testing and the overall challenge of making contacts around the world.
- There were 3 successful contests last month including the CQ WW CW contest that saw a record number of contacts for SARC (2400) with just 4 operators. The RAC Winter DX contest had 15 operators.
- Upcoming contests include Winter Field Day on Jan 25/26, BC QSO Party on Feb 1/2 and the WW RTTY contest on Feb 8/9. Anyone wanting to participate as an operator should contact John B.

Repeaters - Horace B.

- All repeaters are operating normally.
- Dave Cameron and Horace installed WinLink at the Concord repeater site. After testing it was confirmed that there was no interference on any of the existing repeaters.

HAM Classes - John S

- The latest class started on January 5 with 32 participants although 8 were repeats

from the last course. GOTA workshops will need to be scheduled this month to accommodate graduates from the past 2 classes.

3. Old Business

- The Christmas social was well attended and enjoyed by all those present.
- The Flex radio has been moved to Firehall number 1 where it will be set up for remote operation. Gord is still working to obtain permission to install an HF antenna required to operate the Flex - this may still take a few weeks. In the meantime, Reg (VA7ZEB) will proceed to configure the radio for remote operation.
- The 10 GHz beacon has been repaired and re-installed at the Concord repeater site. It is now transmitting the SARC callsign.
- Steve M. and John B. completed the installation of a 1500 Watt inverter in the radio room and cleaned up cables. The monitors and rotator are on city power and will switch over to the inverter during a power failure. At that time the Inverter will need to be manually turned on. Next step will be to install solar power and battery charger.
- More cleanup is needed. Elizabeth G. requested that documentation be created to assist operators when a power fail occurs.
- Two WinLink gateways have been installed: 1 at the Concord repeater site and a second at Firehall No. 1. (Packet and Vara FM are supported). Reg N. tested a WinLink transmission using 5 Watts from Surrey.
- SARC members donated \$250 to the Surrey food bank and Daryl (VE7CQD) matched SARC's contribution with an additional \$250 donation. Thanks to Daryl for organizing this fund raiser event.

4. New Business

- John B. announced that SARC received \$1000 grant to cover Field Day expenses. The same amount will be applied for next year.

- RAC insurance payment has been made. This includes coverage for SARC assets (Some are covered by other agencies.) RAC insurance covers liabilities during club sponsored events as well as damage to the SEPAR trailer, content in the container and limited liability for SARC members operating their equipment. Question asked... if non-RAC SARC members were covered and the answer was yes, as SARC pays the insurance amount for non-RAC members. John B. pointed out that all SARC members should join RAC - the difference in membership fee for RAC and non-RAC members (\$5) does not cover the extra paid to RAC for member's insurance (\$12).
- Reg N (VA7ZEB) gave members an update about upcoming changes to SARC's web site. Reg would like to see the site have additional features. The plan is for SARC to switch hosting platforms to a vendor that provides a higher service level; this will let us do more with the web site.
- An option exists to switch to Amazon Web Services (AWS) and obtain a grant for free services. Regardless of getting the grant, SARC will be moving to a new hosting vendor. A committee will be set up to discuss this more offline.
- Cristian suggested a Saturday workshop on understanding baluns. What they are, how do they work and what to use for each antenna. Andrew offered to help set up a workshop where each participant could build a current balun.
- John B. encouraged Les to speak about his homebuilt 10 GHz antenna and 1 KW linear amp. Les will put some documentation together and get back to the directors.
- John S. gets lots of questions about using an amp with handheld radios. He suggested that Dino might be able to put together a workshop where participants build a 20-30 watt VHF amplifier. Reg agreed that an amp would also be a benefit for those experimenting with SDR transceivers (GNU Radio).
- Guy asked if more presentations could be given by Zoom to address members with mobility issues. Steve M. addressed the reason for in-person meetings.
- Shawn & Elizabeth provided feedback on how workshops and presentations could take a hybrid approach when appropriate.
- Jeremy put forward the idea of purchasing and installing a mini split A/C on the SEPAR trailer to address hotter summer days. Ward suggested that a roof mounted unit might be cheaper. Another thought was to consider using a wrap-around awning for the SEPAR trailer.

Opportunity to provide direction for 2025

Steve M. introduced this part of the agenda explaining that SARC has funds to carry out certain projects in 2025 (within the constraints of our existing space) and encouraged members to suggest ideas that they would like to see implemented. Also, if there were topics or guest speakers that members would like to hear from during monthly meetings.

- Shawn (VE7BD) offered to present a session on surge protection and noise reduction. Shawn also mentioned that he will be attending HamCation in Florida (Feb 7-9) and will submit an article for the Communicator.
- Elizabeth (VA7ELA) would like to see a workshop on analyzing antennas, including troubleshooting antenna problems - perhaps the presentation could follow the antenna building workshop?
- Continuing on the topic of the SEPAR trailer, Andrew suggested that it be used more during the summer to showcase SARC's capabilities. Perhaps using it for POTA or just taking it to a park for the day. Currently, towing the trailer requires a larger vehicle and special insurance may be needed. Jeremy agreed that the trailer was under-utilized. Andrew suggested that it could be used for Winter Field Day.
- Steve M. reviewed the status of the trailer and the big-foot antenna. Insurance was covered on both vehicles and the tires are OK on the SEPAR trailer but the antenna trailer's tires should be checked in the spring.
- Andrew reminded members that the Winter Field Day will take place later this month.

Andrew will take on the management of the event and requested assistance from anyone interested.

- Reg relayed that Angus was interested in setting up a UHF link to the VHF repeater. Several pros and cons were discussed from various members. Dave C. will be contacted for input in setting this up. Steve M. believes that this connection may have been previously running and pointed out that we already have the necessary equipment.
- Jeremy suggested that members can set up an SDR to assist Dave Cameron with tracking down operator violations. For those interested, there is a Facebook group with more details.
- Andrew asked if the Flex is permanently moved to the Firehall, could SARC consider replacing it with a Yaesu model? Steve agreed that, as a training club, having a variety could be beneficial. If necessary, this decision will go to the membership for a vote during a general meeting.

- Reg inquired about the ownership of the Kenwood radio that was replaced at FH1. John S. believes that it was purchased by the City of Surrey.

- John B. offered to bring in his radio for an upcoming contest, but he stated that it would possibly be the last time as the club should look into purchasing a second contest radio or continue to borrow from ICOM.

5. Adjournment

Steve moved to adjourn the meeting; seconded by Reg N. Carried. The January meeting adjourned at 20:26 hours.

~ Mike VA7YEG
Recording Secretary



Social Reminder

The Saturday weekly social gathering is once again 'on' at the Denny's Restaurant, 6850 King George Blvd., Surrey BC from 07:30—09:30. All are invited. Afterwards, we will host workshops and will be available to invigilate Amateur Radio exams at the OTC, 5756—142 Street, Surrey from 10-noon.

Bring your ham issues, our Elmers will try to help you sort them out.

February
2025



SARC General Meeting minutes

February 12, 2025

Recording Secretary MIKE PORISKYVA7YEG

SARC General Meeting Minutes 25.02.12

Attendance: Approximately 20 members participated in the online Zoom meeting

Start Time: 19:00 hrs. **Location:** Zoom online

Welcome & Presentation of Agenda:

Steve called the meeting to order and gave a brief welcome message and introduction of the guest speaker - Andrew Walker, the creator of the WoAD application.

Andrew started with a brief introduction to programming and his involvement with Ham radio and is now a member of VECTOR where he found a challenge in reducing the size of their Grab-&_go radio kits. He considered creating an Android app to interface with WinLink due to the power available in cell phones these days.

The product was first released in 2020 and available on the Google Play store in 2021. Its features are similar to what is found in the Anymail iPhone app.

Andrew went through the installation and configuration of the software and then systematically covered the various options for

adding sessions and sending messages to a WinLink gateway. Andrew covered the internal block diagrams for the different connection methods - showing that most of the components are built into the cell phone. He explained the options that could be used depending on what hardware was available to the user - radio type, modem, etc. Lastly, he covered features that would be soon added to the application.

Business Meeting

1. Announcements

- Adam Drake is still looking for handheld radios that his summer school students could use.
- Horace has offered to coach members on setting up their radios to connect with a WinLink gateway. Anyone interested should contact Horace directly.
- The Satellite station and 9700 radio are available to all members to make contacts using orbiting Satellites. Dino has also offered to familiarize members with operating the Satellite equipment. Contact Dino to schedule a Saturday morning session.



- An email bulletin is sent out (approx.) on the first and third Wednesday each month to all members listing the club's upcoming activities. Contact John Brodie if you are not on the list.
- Reminder that everyone is invited to SARC's Saturday breakfast at Denny's (6850 King George Blvd) - 7 to 9 am, followed by a visit to the OTC.

2. Committee Reports

Financial Report - Treasurer Scott H. was not available tonight. Steve presented slides showing the Profit & Loss financial report followed by the Balance Sheet ending January.

- The biggest expense this month was the RAC insurance payment and license renewal of the SEPAR trailer.

Nets - Reg N

- The GOTA net has been suspended due to minimal use by new Hams. The net will be scheduled as needed when each course finishes.
- Other nets are going well with no complaints received.
- Reg also gave members an update regarding changes coming to the SARC website: Applied for and was accepted for free workspace/programs from AWS and Digital Ocean, giving SARC the ability to set up and their own domains. SARC domains were switched from StartLogic registrar to AWS. A 5-member admin team was formed to help spread the load with making updates to the web site.

SEPAR/OTC - Gord K.

- No problems to report. Good relationship with SF S&R. WinLink gateways were installed at 2 SEPAR locations. SARC members are encouraged to log in and use these frequencies to send email messages over WinLink.
- The HF antenna has been approved for installation on Firehall #1's roof. The mast is already mounted to the building and the coax cable is already in place.

- Special recognition goes out to Ron (VE7VTA) for consistently checking into the Inter-municipality Radio Net.

Membership - John B.

- Holding steady at 142 paid members. Recent graduates are given a free non-voting SARC membership. For courses that ended started in Jan and March 2024, while soon due, John has decided to wait until the beginning of SARC's new membership year before approaching the members to re-join.

Contests - John B.

- Feb 1-2 saw the completion of the BC QSO Party contest. SARC had a total of 13 operators (9 SSB and 4 CW) and achieved a final count of 1583 contacts - just under our score from last year.
- Coming this weekend is the ARRL CW contest however there does not appear to be high interest for this event so SARC will not support a team. Members who are interested may use SARC's radios.
- Andrew gave a brief recap of the Winter Field Day event. Five operators (and 2 visitors) set up at Derby Reach Park obtaining a total contact count of 63.
- The ARRL DX SSB contest will take place on March 1-2. Anyone interested in participating in this contest should send an email to John B.
- RSG3 Commonwealth CW contest will take place on March 8-9.
- SARC has received the special callsign VB7MAN to commemorate Operation Manna, 80-year anniversary and will be operating the special event on April 25-27. A special website has been set up with more information - [Operation Manna @ 80](#)

Repeaters

- All repeaters are operating normally. No Information was discussed.

HAM Classes - John S.

- The current class is just winding up. Exams will take place over the next few weeks. Following that, GOTA workshops will need



to be scheduled to accommodate graduates from the past 2 classes.

3. Old Business

- The Flex radio has been moved to Firehall number 1 where it will be set up for remote operation.
- Andrew is not available on Field Day to coordinate the day's activities. If anyone is interested in taking on this position, contact Steve. Field Day is scheduled for mid to late June. Andrew indicated that the new coordinator will have access to all his records from the previous year.
- Horace (VA7XHB) is planning a WinLink net; the first one scheduled for Family Day, February 17. For more information on participating in the net, watch for more information in the SARC bulletin. Signup messages should go out with a request for more information to VE7ADF. Use Subject "WinLink Net Signup" to register.
- The 10 GHz beacon has been repaired and re-installed at the Concord repeater site. An article was published in RAC's TCA magazine highlighting 10-GHz communications between Dino and Scott. John B. took a moment to recognize what Dino and Scott have achieved and gave appreciation for the beacon project. Plans are underway to replace certain parts within the transmitter.
- The next bulletin is being sent out Feb. 19 - notify John B. if you have any topic that you would like to contribute.

- The 24 GHz beacon is waiting for an antenna from Holland. Dino is hoping to have the beacon installed by mid-March.
- The 6 Meter beacon is finished and waiting installation. This is a 2-Watt beacon operating on 50.070 MHz as VE7SAR/B.
- Reminder that the Satellite station and 9700 radio are available to all members who want to learn how to make contacts through Satellites. Contact Dino to schedule a Saturday morning session. Andrew asked if the radio room would be available for him to use the satellite station and was informed that there may be contest operators present this weekend. Reg asked if the Satellite equipment was available to non-SARC members, perhaps even reaching out to Facebook users. Topic will be discussed.
- Regarding the topics brought forward by members at last month's general meeting, Steve M. is working through the list to arrange workshops.

4. New Business

- The Burnaby swap meet will take place on March 22. John B. will book a couple of tables for SARC sales. Table space is available for selling personal items. Contract a member of the executive if you have anything to sell. The swap meet will take place at their Cariboo Road location.
- South Fraser Search and Rescue have been cleaning up the OTC and will have surplus furniture items to give away.
- Call for Questions: Reg asked when we would start meeting in person again for SARC meetings. Steve suggested that the next meeting in March would be at the Fire Training Center. Gord will look into scheduling this event.

5. Adjournment

Steve moved to adjourn the meeting; seconded by Reg N. Carried. The February meeting adjourned at 20:55 hours.

~ Mike VA7YEG
Recording Secretary





The RF Communications course at Kwantlen Park Secondary School

Several students from our 2024 summer school course are still active at their school. In February we built several 5-band HF linked dipole antennas and tested them over several spare blocks and lunch hours. We even managed a contact with a school program in Missouri.



Despite snow on the ground and some chilly temperatures, here are two Grade 12 students, both of whom attained advanced certification, tuning and trimming each of the five bands.

We have featured this antenna in several past issues of *The Communicator* and it continues to amaze with its easy deployment and great results. The bonus is no need for an antenna tuner as each segment is pre-tuned for that band.



By the final day the snow was gone and we could concentrate on making contacts... which we did on my Xiegu G90, including Italy! ~ John VE7TI



An update from Jinty Reid



About 6 weeks ago while at choir practice I took a horrible fall down choir steps and landed jammed between the organ and the piano. Ambulance was called and the fire dept. as it was tricky to get me out of a tight space. Bruising on my chest, neck and head and excruciating back pain. They discharged me home after 48 hrs and my daughter came over from the Island for a week to take care of me as I could not move without help. Doctor said I have to have a walker permanently now and I also use a quad cane. She said I have had too many falls and this one was a dangerous one, I could have broken my neck. I continue to have back pain and tendinitis in my right arm and left wrist and thumb so wear a brace. I am thankful I can still drive.

Jinty, on behalf of the directors and members at SARC and SEPAR, we wish you a speedy recovery! -ed.



Thank you recent visitors... 166 countries and counting—more than in my log!

	33,628		248		72		20		8		3		2		1
	21,857		217		72		17		7		3		2		1
	13,529		208		70		15		6		3		2		1
	3,738		190		70		14		6		3		2		1
	2,341		189		64		13		6		3		2		1
	2,005		188		48		13		6		3		2		1
	931		188		48		12		5		3		2		1
	903		181		46		12		5		3		2		1
	739		180		45		12		5		3		2		1
	733		176		43		11		5		3		2		1
	705		176		39		11		4		3		1		1
	587		174		34		11		4		2		1		1
	544		141		33		11		4		2		1		1
	452		115		31		11		4		2		1		1
	439		114		30		10		4		2		1		1
	375		106		30		10		4		2		1		1
	370		100		28		10		4		2		1		1
	351		93		28		10		4		2		1		1
	327		88		27		9		4		2		1		1
	307		82		20		9		4		2		1		1
	306		81		20		8		4		2		1		1

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A Review of Distracted Driving Regulations in BC

As they apply to Amateur Radio operators

There have been a few news stories lately about drivers being convicted of distracted driving. When all they did was momentarily touch their phone without even looking at it. This has prompted a discussion about the fairness of the current laws. To keep everyone up to date, below is an extract of the current BC Motor Vehicle Act:

Use of electronic devices while driving

Publication date: February 5, 2021

Hand microphones

A “hand microphone” is a half-duplex communication device used principally for commercial purposes.

It is a hand-held unit that:

- Is both receiver and microphone
- Is operated by a push and hold-to-talk function
- Allows for oral communication, but not for the transmission and receipt of oral communication at the same time

A person may use a hand microphone while driving if:

- It is within easy reach of the driver’s seat, and
- It is securely fixed to the motor vehicle or worn securely on the person’s body in a manner that does not obstruct the person’s view of the front or sides of the vehicle or interfere with the safety or operating equipment of the motor vehicle

“Two-way radios” are ½ duplex VHF, UHF and HF communication devices transmit sound over a radio frequency.

Two-way radios are commonly used by:

- Search and rescue teams
- Commercial drivers
- Long-haul truck drivers, and
- Citizen band (CB) and amateur radio operators

They have a hand-held microphone connected to a transceiver unit and it is operated by a push and hold-to-talk function and allows for oral communication. They do not allow for the transmission and receipt of oral communication at the same time.

A person may use a two-way radio while driving if the transceiver:

- Is within easy reach of the driver’s seat, and
- Is securely fixed to the motor vehicle or worn securely on the person’s body in a manner that does not obstruct the person’s view of the front or sides of the motor vehicle or interfere with the safety or operating equipment of the motor vehicle

Please note: Hand microphones, including two-way radios, may only be used in the push and hold-to-talk function while driving. Other functions on these devices cannot be operated by a driver while driving.

~ <https://www2.gov.bc.ca/gov/content/transportation/driving-and-cycling/roadsafetybc/high-risk/distracted/electronic-devices>

We're

QRT

The Crucial Role of Amateur Radio

In emergency communications and the future

by JOHN SCHOUTEN VE7TI

Amateur radio is an often-overlooked but vital resource for emergency communication across the globe. In an age where so much of our connectivity depends on centralized infrastructure — from cell towers to satellite networks — amateur radio remains a unique and resilient alternative. It is not reliant on a single point of failure, and its open-source nature fosters innovation and adaptability. Despite its rich history and continued relevance, amateur radio faces challenges, particularly in raising awareness of its significance and encouraging the next generation of operators. We must act to not only preserve but also promote the role amateur radio plays in both emergencies and everyday life.

The Vital Role of Amateur Radio in Emergencies

In times of crisis, especially when conventional communication networks fail, because of damage or overload, amateur radio has historically stepped in as a lifeline. Earthquakes, hurricanes, wildfires, and other natural disasters can often bring down phone lines, cell towers, and even satellite links. In such instances, when communication is essential for coordinating rescue efforts, relaying life-saving information, and keeping communities informed, amateur radio proves

to be an indispensable resource. We need not look far back for prime examples, with the devastation of Hurricane Helene, and the critical need filled by amateur radio as a prime example in 2024.

What sets amateur radio apart is that it doesn't depend on centralized infrastructure. A network of interconnected amateurs, with nothing more than a radio, antenna, a power source, and some basic knowledge, can create ad hoc communication systems almost anywhere. Even in remote locations where cell towers are nonexistent, ham radio operators can communicate locally or even globally. Whether it's a handheld transceiver or a large-scale emergency communications system, the flexibility of amateur radio allows it to function independently of the commercial grid.

Additionally, amateur radio operators are skilled in operating in adverse conditions. They are trained to work with limited equipment, deal with interference, and adapt to ever-changing circumstances — invaluable traits when traditional communications are rendered useless. Their ability to provide consistent communication, even in the most challenging situations, has made them integral to organizations such as the Red Cross, Salvation Army, local emergency services, and disaster relief teams.



The Myth of Amateur Radio's Demise

There is a common misconception that amateur radio is a dying hobby. Critics often point to the rise of digital communications, the prevalence of social media, and the widespread availability of internet-based messaging platforms as signs of amateur radio's irrelevance. However, this view is fundamentally mistaken. While the internet and other modern technologies have certainly changed the way we communicate, they have not rendered amateur radio obsolete. In fact, they have merely provided new avenues for its continued evolution.

Amateur radio is not dying; it is evolving. Digital communication modes, such as digital packet radio, D-STAR, and PSK31, are flourishing within the amateur community, proving that radio enthusiasts are adapting to the changing landscape. In fact, many amateur radio operators are at the forefront of experimenting with new communication technologies that push the boundaries of what is possible. Far from being stuck in the past, ham radio is embracing the future with open arms.

What's more, the increasing reliance on internet-based communication has made the resilience of amateur radio all the more significant. The internet is a centralized, vulnerable infrastructure that can be taken down by cyberattacks, natural disasters, or system failures. In contrast, the decentralized nature of amateur radio ensures that, even if the grid goes down, communication can continue. This is why it is not only relevant today, but it is more necessary than ever.

Educating the Public on Amateur Radio's History and Importance

Despite its ongoing relevance, amateur radio remains largely underappreciated by the general public. This is partly due to the lack of widespread understanding of its history, its contributions to both technology and society, and the role it plays in emergency communications. There is a pressing need to educate the public about amateur radio's importance — both as a hobby and as a vital emergency resource.

The history of amateur radio is rich with moments of innovation and discovery. Long before the advent of the internet, amateur radio operators were pioneers of wireless communication, experimenting with new frequencies, modes of operation, and technologies. The first transatlantic radio signals, the development of early radar systems, and even the first communications satellites all owe a debt to amateur radio experimentation. The hobby has served as a testing ground for some of the world's most important communications technologies, and many of the people who contributed to these advances were once "hams."

In addition to its technological achievements, amateur radio has a proud history of community service. During major disasters, amateur radio operators have been some of the first to respond, offering their services free of charge to ensure that emergency communications continue. Remember that we are called 'Amateurs' not because we do not know what we are doing, but because we offer our services without expectation of payment. These amateurs, all licensed operators, many from technical fields with years of training, are often the unsung heroes in times of crisis.

To secure its future, we must take steps to increase awareness of amateur radio's role and importance. Schools, libraries, and community organizations can help by providing educational programs that introduce young people to the history and potential of amateur radio. Amateur radio clubs, too, must continue to reach out to the public and foster relationships with local governments, first responders, and community leaders to highlight the hobby's vital contributions.

Fostering Youth Participation and Innovation

For amateur radio to remain a force for good in the future, it is imperative that we encourage youth participation. The hobby's appeal for younger generations is not always immediately apparent, especially in a world dominated by digital technology. However,



with the right approach, we can foster a new generation of ham radio operators who will continue the tradition of innovation and service.

Here in Surrey, BC, we took a giant step in July 2024, with the introduction of a high school credit course in RF Communications that resulted in 20 new amateur radio operators from grades 8 to 12. That course will be repeated this summer and will be a regular course selection in the fall semester, thanks to the persistence and dedication of Adam Drake VE7ZAL, a local high school electronics teacher.

As co-instructor and amateur radio exam invigilator, one of my key take-aways from involvement in that summer school course, was the realization that there is a cadre of teens who are like sponges, interested and willing to learn, even if it meant giving up 20 days of their summer vacation. Fostering youth participation is showing young people that amateur radio is not just about old-fashioned radios and wires. It is a gateway to a wide array of modern, digital communications technologies and a key to the devices that they use everyday. From satellite communications to digital modes and even the ability to experiment with machine learning and artificial intelligence in radio systems, amateur radio offers a wealth

of opportunities for young people interested in technology and engineering.

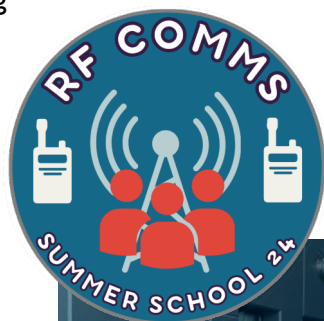
Many amateur radio organizations already offer educational programs, youth camps, and competitions that help introduce kids to the world of radio. These efforts must be expanded and refined, and we need to provide more hands-on experiences that appeal to today's tech-savvy youth. By demonstrating the relevance of amateur radio to modern communication challenges, we can inspire the next generation of innovators and communicators.

Amateur radio is not just a relic of the past; it is a critical part of our emergency communications infrastructure and a hub of innovation in modern communications technologies. It is a community of volunteers dedicated to providing reliable communication in emergencies, and it is an invaluable educational tool for those interested in exploring the world of electronics, radio waves, and digital technologies.

To ensure that this essential service continues to thrive, we must educate the public about its history, role, and importance, and we must actively engage the youth of today in its future. By doing so, we can secure the continued relevance and vitality of amateur radio for generations to come.

And that is how I see it. I'm QRT for this issue, 73

~ John VE7TI



HAM LEFTOVERS...

How to use AI in your ham shack

Are you using Artificial Intelligence in your ham shack? If not, you're missing out! In this video, Dive into how AI tools like ChatGPT or Claude.ai can revolutionize your amateur radio experience. From building antennas like a 40-meter dipole or an end-fed half-wave for 40 to 10 meters, to troubleshooting schematics of radios, AI proves to be a powerful companion in the shack: <https://youtu.be/sK18DB6n2P4>

You will want this ham dashboard

This is one of the sharpest dashboards I have seen to date. It is a highly customizable ham display and super simple to get up and running. YouTube: <https://youtu.be/9ZZXg60tN-o>

This 3D-printed satellite antenna is fantastic!

This is a 3D-printable "Helicone" antenna for L-Band (NOAA, Meteor, and other weather satellites). It's available on Thingiverse: <https://www.thingiverse.com/thing:643>. It works just as well as my larger L-band satellite dish! And it's much easier to use hand-held for tracking Low-Earth-Orbit satellites. You'll also need an RTL-SDR and an L-band filter/amplifier device. YouTube: https://youtu.be/_1DWHEj78gQ

Eric Nichols, KL7AJ, on the ionosphere

The ionosphere is more complex than just a simple mirror for radio waves: <https://youtu.be/VClrJPOOuVw>

DX FT8: A QRP, five-band, standalone transceiver

Dan KB6NU recently swapped some email with a fellow who purchased a quantity of Tech study guides for a class he's teaching. In addition to talking about the study guides, we got to talking about microcontroller projects. He wrote, "I assume you've seen the microcontroller based, standalone FT8 transceiver already, but if not it's worth a peek: <https://www.youtube.com/watch?v=8b2WOxESAVU>."

Well, I hadn't heard of it, so I did give it a peek. The DX FT8 looks like a very cool project. If I didn't already have a dozen half-finished projects already, I might give this one a go.

What's new at Digital Library of Amateur Radio & Communications

Kay Savetz K6KJN provides an overview of the latest additions to [DLARC](https://www.dlarc.org/).

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2024-2025

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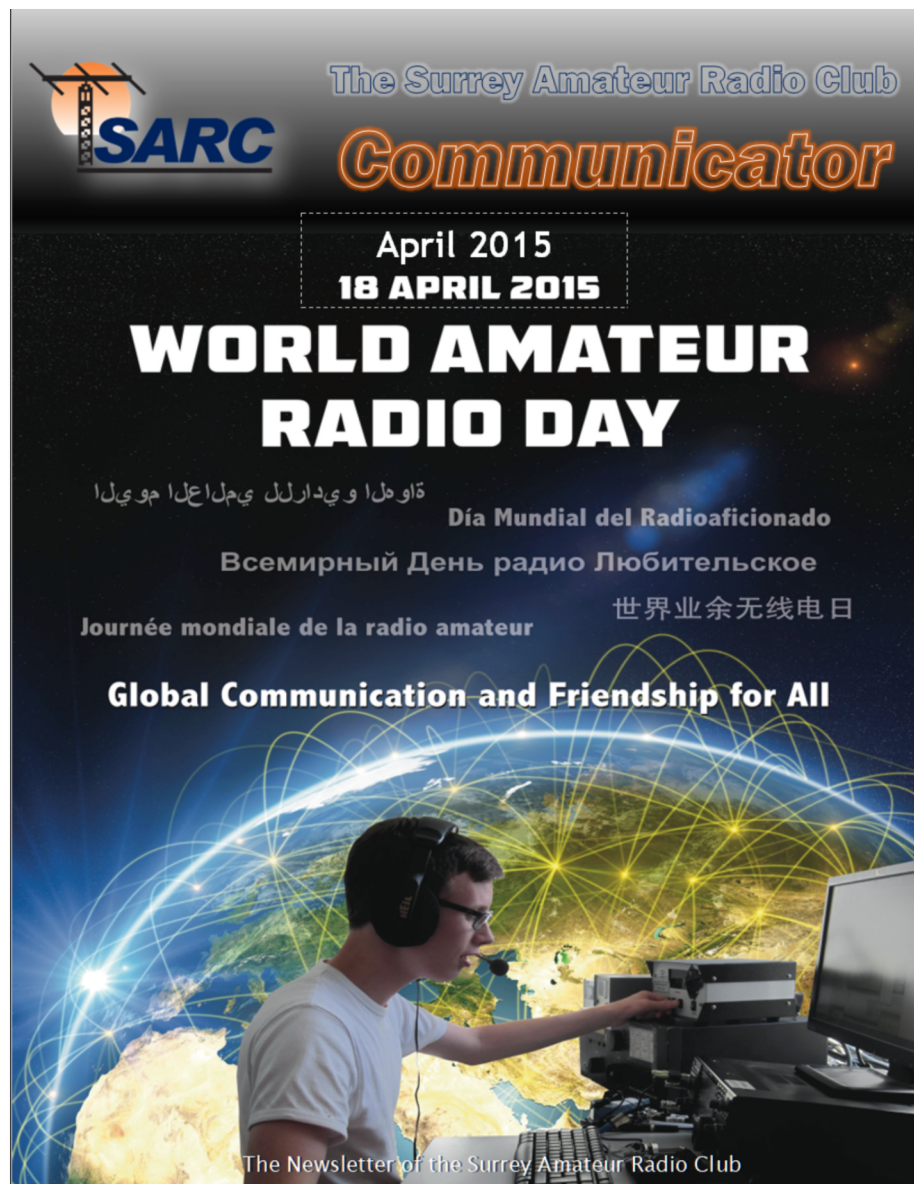
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A look back...

At The Communicator—April 2015

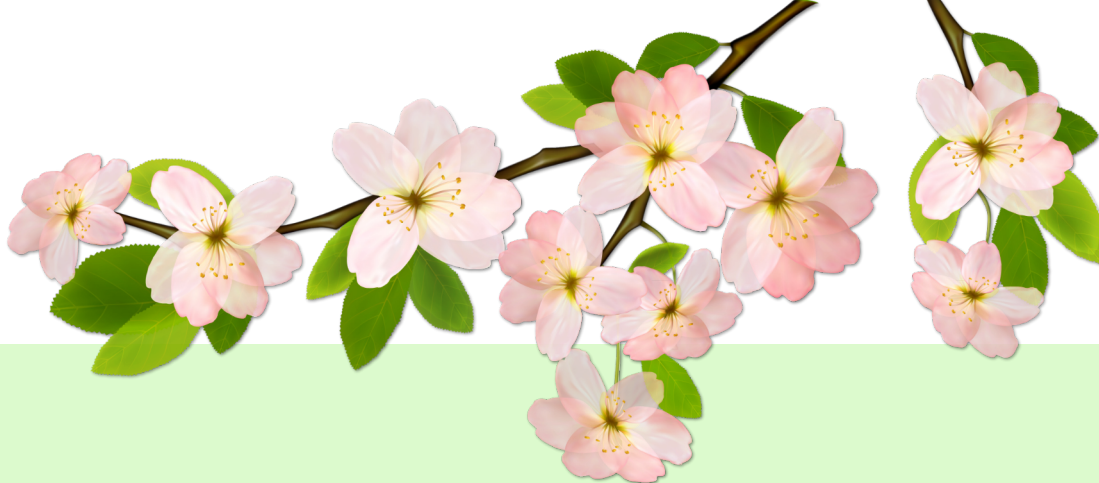


Past Communicators are available at:

[Past Communicator Issues](#)

or search the complete Communicator contents & index at:

[SARCindex](#)



March & April

Spring is around the corner; time to get those POTA kits dusted off.

The March meeting will be back at the Surrey Fire Service Training Centre. The program is still under development, but we tentatively have Shawn Dooley VE7BD, scheduled to present on surge protection and voltage anomalies at your station (and your house).

April's program is also 'under construction'.

SARC hosts an Amateur Radio net each Tuesday evening at 8 PM. Please tune in to the VE7RSC repeater at 147.360 MHz (+600 KHz) Tone=110.9, also accessible on IRLP node 1736 and Echolink node 496228. On UHF we operate a repeater on 443.775MHz (+5Mhz) Tone=110.9 or IRLP Node 1737.

Every Thursday evening at 8 pm is SARC's net for newly certified hams, although more experienced hams are also encouraged to attend. This net operates on the same frequencies shown above for the Tuesday nets. Participants will help you with your new-ham questions and assist you in getting comfortable using your radio. Check in with your GOTA net hosts.

Join the 220 MHz net taking place at 7:30 pm on the last Sunday of every month on VE7RSC repeater 223.960 MHz -1.6MHz tone 110.9 Hz, with net control, Shawn VE7BD. This is not a "chat" net – just check in, exchange signal reports, and get on with your evening.

Down The Log...

SARC Monthly Meetings

2nd Wed. (Sept-Jun)
1900 hrs at the [Surrey Fire Service Training Centre](#), 14923 - 64 Avenue, Surrey, BC. Here is a what3words link and map: <https://what3words.com/markers.addiction.ozone>

Weekly SARC Social

Saturday between 0730 and 0930 hrs at the Denny's Restaurant, 6850 King George Blvd., Surrey BC

Workshops

Saturday between 1000 and Noon at the OTC 5756 142 Street, Surrey

SEPAR Net

Tuesday at 1930 hrs local
on 147.360 MHz (+) Tone=110.9

SARC Net

Tuesday at 2000 hrs local
on 147.360 MHz (+) Tone=110.9

VE7RSC Repeaters

2m North: 147.360MHz+
Tone=110.9Hz
IRLP node 1736
Echolink node 496228

2m South: 147.360MHz+
Tone=103.5Hz Fusion capable;
No IRLP/EchoLink

1.2m: 223.960 Mhz -1.6
Tone=110.9Hz

70cm: 443.775MHz+
Tone= 110.9Hz
IRLP node 1737
WiRES-X Room ID 00047



We Have A SARC Patch!

These are suitable for sewing on a jacket, cap or your jammies, so you can proudly display your support for the club.

The price is \$4 each or three for \$10 and they

**Successful Guide to the
Basic Exam
for the
Canadian Amateur Radio
Operator Certificate**

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Version 1.8 May 2024

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The Most Efficient Guide for the Basic Exam

- Focuses only on the exam material
- Organized by ISED's Eight Categories and questions
- 103 Pages, emailed to you as a pdf
- Uses the same language as the exam questions
- Helps you understand and remember the material
- Explains "tricky" questions
- E-transfer \$20 to vicd@uwaterloo.ca, of which \$10 supports the Kitchener Waterloo club's educational work.

www.ve3yt.com for the guide, my intro book and cw course



**Thank you iCOM Canada
for your support!**

A New Innovative Shack Style
Full Control Head with Separated RF Deck

HF/50 MHz TRANSCEIVER

IC-7760

